



# Remedial Action Report

## REMEDIAL ACTION REPORT

**216 Paterson Plank Road Site  
Operable Unit No. 2 (OU-2) Remedy  
Carlstadt, Bergen County, New Jersey**

**Prepared For:** 216 Paterson Plank Road Cooperating PRP Group

**Submitted To:** U.S. Environmental Protection Agency, Region 2  
290 Broadway, 19<sup>th</sup> Floor  
New York, New York 10007

**Submitted By:** Golder Associates Inc.  
744 Broad Street  
25<sup>th</sup> Floor, Suite 2500  
Newark, New Jersey 07102 USA

### **Distribution:**

3 Copies	U.S. Environmental Protection Agency, Region 2
1 Copy	New Jersey Department of Environmental Protection
1 Copy	216 Paterson Plank Road Executive and Technical Committees
1 Copy	Golder Associates Inc.

**September 29, 2011**

**Project No. 943-6222.001**

**A world of  
capabilities  
delivered locally**





## Table of Contents

Cover Letter

List of Acronyms ..... iii

<b>1.0 INTRODUCTION</b>	<b>1</b>
1.1 Site Background and History	1
1.2 Project Participants	3
1.2.1 USEPA Remedial Project Manager	4
1.2.2 The Group Representative	4
1.2.3 Remedial Designer	4
1.2.4 Quality Assurance Official	5
1.2.5 Remedial Action Contractors	5
1.3 Report Organization	6
<b>2.0 CONSTRUCTION ACTIVITIES</b>	<b>7</b>
2.1 Contract Procurement and Mobilization	7
2.2 Overview of OU-2 Remedy	9
2.2.1 Cover System	9
2.2.2 Stream Bank Enhancements	11
2.2.3 Hot Spot Activities	12
2.2.4 Enhanced Groundwater Recovery System	13
2.3 Health and Safety	15
2.4 Imported Fill	16
2.5 Waste Disposal	16
2.6 Meetings, Documentation, and Recordkeeping	17
2.6.1 Meetings	17
2.6.2 Progress Reporting	18
2.6.3 Photographic Documentation	18
2.6.4 Recordkeeping	19
<b>3.0 REMEDIAL DESIGN MODIFICATIONS</b>	<b>20</b>
<b>4.0 CHRONOLOGY OF EVENTS</b>	<b>22</b>
<b>5.0 PERFORMANCE STANDARDS AND QUALITY CONTROL</b>	<b>25</b>
5.1 Construction Quality Assurance (CQA) Program	25
5.2 CQA Documentation	26
<b>6.0 PRE-FINAL AND FINAL INSPECTIONS</b>	<b>28</b>
6.1 Pre-Final Inspection	28
6.2 Final Inspection	28
<b>7.0 CERTIFICATION</b>	<b>29</b>
<b>8.0 OPERATIONS AND MAINTENANCE</b>	<b>30</b>
<b>9.0 SUMMARY OF CONSTRUCTION COSTS</b>	<b>31</b>
<b>10.0 OBSERVATIONS AND LESSONS LEARNED</b>	<b>32</b>
<b>11.0 CONTACT INFORMATION</b>	<b>34</b>
<b>12.0 REFERENCES</b>	<b>35</b>



## List of Figures

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Project Organization Chart
Figure 4	Cover System Sections
Figure 5	Cover System Details
Figure 6	Hot Spot Removal Plan and Section
Figure 7	Groundwater Recovery System Plan
Figure 8	Groundwater Recovery System Details
Figure 9	Project Schedule

## List of Appendices

Appendix A	Construction As-Built Documentation
Appendix B	Sheet Pile Wall Installation Records ( <i>electronic copy only</i> )
Appendix C	Imported Fill Documentation ( <i>electronic copy only</i> )
Appendix D	QA Analytical Laboratory Testing Results ( <i>electronic copy only</i> )
Appendix E	Off-Site Waste Disposal Documentation ( <i>electronic copy only</i> )
Appendix F	Progress Meeting Minutes ( <i>electronic copy only</i> )
Appendix G	Monthly Progress Reports ( <i>electronic copy only</i> )
Appendix H	Representative Progress Photographs
Appendix I	Field Density and Thickness Verification Documentation ( <i>electronic copy only</i> )
Appendix J	Extraction Well and Piezometer Records ( <i>electronic copy only</i> )
Appendix K	Geosynthetic Installation Documentation ( <i>electronic copy only</i> )
Appendix L	Hot Spot Removal Documentation ( <i>electronic copy only</i> )
Appendix M	Pre-Final Inspection Memorandum, dated July 15, 2011
Appendix N	Final Inspection Memorandum, dated July 22, 2011
Appendix O	USEPA Acknowledgement of Final Inspection, dated July 29, 2011

*Note: all appendices identified as “electronic copy only” are not reproduced in hard copy with this report, but rather are provided in electronic (i.e., PDF) file format on the CD-ROM attached to the inside cover of the report binder.*



## List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ACS	Air Containment Structure
AST	Above-ground Storage Tank
BCSCD	Bergen County Soil Conservation District
BRA	Baseline Risk Assessment
C&D	Construction and Demolition
CETCO	CETCO Contracting Services, Inc.
CM	Construction Manager
CQA	Construction Quality Assurance
CQAP	Construction Quality Assurance Plan
CWP	Construction Work Plan
DGA	Dense Graded Aggregate
e.g.	“exempli gratia” or “for example”
ENTACT	ENTACT, LLP
EW	Extraction Well
FDR	Final Design Report
FFS	Focused Feasibility Study
FFSI	Focused Feasibility Study Investigation
FS	Feasibility Study
FVP	Field Verification Program
GCL	Geosynthetic Clay Liner
Group	216 Paterson Plank Road Cooperating PRP Group
H&S	Health and Safety
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
i.e.	“id est” or “that is”
IMC	Intermodal container
Inmar	Inmar Associates, Inc.
ISAS	In-situ Air Stripping
ISS	In-situ Soil Stabilization/Solidification
Max.	Maximum or Maxima
Min.	Minimum or Minima
NJDEP	New Jersey Department of Environmental Protection Agency
NPL	National Priorities List
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
OU-1	Operable Unit No. 1
OU-2	Operable Unit No. 2
PCB	Polychlorinated biphenyl
PPE	Personal Protective Equipment
PRP	Potential Responsible Party
PSE&G	Public Service Electric and Gas Company
PZ	Piezometer
QA	Quality Assurance
QAO	Quality Assurance Official
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAC	Remedial Action Contractor
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan





## List of Acronyms

RD	Remedial Designer
RDWP	Remedial Design Work Plan
RF	Radio Frequency
RFI	Request for Information
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SCP	Scientific Chemical Processing Site
SET	DuPont Secure Environmental Treatment (SET) Facility
Site	216 Paterson Plank Road Site
SHSO	Site Health and Safety Officer
Typ.	Typical
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WMI	Waste Management, Inc.
WRScompass	Compass Environmental, Inc. (d/b/a WRScompass)



## 1.0 INTRODUCTION

This Remedial Action Report (RAR) was prepared, on behalf of the 216 Paterson Plank Road Cooperating PRP Group (Group), to summarize and document the implementation of the Operable Unit No. 2 (OU-2) Remedy at the 216 Paterson Plank Road Site (Site) in the Borough of Carlstadt, Bergen County, New Jersey. See Figure 1 for a Site location map.

This RAR satisfies the requirements stipulated within the Consent Decree, effective September 30, 2004, entered between the Group and the U.S. Environmental Protection Agency (USEPA) for the implementation of the OU-2 Remedy.

### 1.1 Site Background and History

The Site is located at the intersection of Paterson Plank Road and Gotham Parkway in Carlstadt, Bergen County, New Jersey, and covers an area of about 6-acres. See Figure 1.

The property is a former chemical recycling and waste processing facility, which ceased operation in 1980, and is located in a light industrial/commercial section of the Borough of Carlstadt, New Jersey (see Figure 1). The property is bordered to the southwest by Paterson Plank Road, to the northwest by Gotham Parkway, to the southeast by a trucking company (i.e., ABF Trucking, Inc.), and to the northeast by Peach Island Creek (see Figure 2).

In 1983, the Site was placed on the National Priorities List (NPL). Between 1983 and 1985, the New Jersey Department of Environmental Protection (NJDEP) required the Site owner<sup>1</sup> to remove about 250,000 gallons of wastes stored in tanks, which had been abandoned at the Site.

In September and October 1985, USEPA issued administrative orders on consent (i.e., Consent Orders) and unilateral orders to the identified potential responsible parties (PRPs), who agreed to conduct a remedial investigation and feasibility study (RI/FS) for the Site.

In 1985, USEPA issued an administrative order to Inmar Associates, Inc. (Inmar), requiring the company to remove and dispose of the contents of five (5) tanks containing wastes contaminated with polychlorinated biphenyls (PCBs) and other hazardous substances.

In 1986, Inmar removed 4 of 5 tanks. The 5<sup>th</sup> tank was not removed at that time, due to the nature of the contaminants found in the tank. Subsequently, the 5<sup>th</sup> tank and its contents were removed and disposed of off-Site, by the Group, in February 1998.

---

<sup>1</sup> Throughout the late 1960s and 1970s, Inmar Associates, Inc. or its predecessor Corporations held title to some or all of the SCP property in the Borough of Carlstadt.



An RI for the Site (Dames and Moore, 1990), which evaluated soil and groundwater conditions at the site, was initiated in 1987 and completed in 1990.

In July 1989, Dames and Moore excavated twenty-three (23) test pits to further evaluate the nature of the surficial historic fill materials. Results of these test pits were summarized in a report titled Final Report - Excavation of Test Pits (Dames and Moore, 1989).

In 1990, a Baseline Risk Assessment (BRA) of the Site was conducted by Clement Associates, Inc. (Clement, 1990), following a contemporary USEPA guidance for conducting risk assessments and utilizing information collected during the RI.

On September 14, 1990, USEPA issued a Record of Decision (ROD) for the implementation of the OU-1 Interim Remedy at the Site. This was intended to remediate the shallow *"contaminated soils and groundwater above the clay layer"* on an interim (i.e., temporary) basis, until such time as a final remedy (i.e., OU-2 Remedy) would replace the OU-1 Interim Remedy.

Between August 1991 and June 1992, construction of the OU-1 Interim Remedy was undertaken by the Group, pursuant to an Administrative Order, dated September 28, 1990. In summary, the OU-1 Interim Remedy included the following remedial components:

- A perimeter soil-bentonite slurry wall, which included an integral, vertical 60-mil high-density polyethylene (HDPE) geomembrane barrier
- An exposed 80-mil HDPE geomembrane barrier (i.e., liner), which encompassed the entire surface area defined by the perimeter slurry wall
- A steel sheet pile wall along Peach Island Creek
- A shallow groundwater recovery system including five (5) extraction wells screened in the underlying historic fill and an above-grade groundwater conveyance system, which discharged into a 10,000-gallon above-ground storage tank (AST) on-Site
- A chain link fence around the entire Site

The implementation of the OU-1 Interim Remedy was documented in a RAR dated September 25, 1992. After construction of the OU-1 Interim Remedy, the Group commenced operation and maintenance (O&M) activities at the Site in accordance with the OU-1 Interim Remedy's O&M Plan, dated July 19, 1991, and the O&M activities continued until implementation of the OU-2 Remedy was completed.

Following implementation of the OU-1 Remedy and at the request of USEPA, a Focused Feasibility Study (FFS) was conducted to evaluate final remedial actions for the contaminants within the surficial historic fill material and shallow groundwater (Golder, 2001), and this OU-2 FFS was finalized and submitted to USEPA in 2001.



As part of this OU-2 FFS, additional investigation was conducted on-Site to delineate a distinct sludge Hot Spot area, and the results were presented in a Focused Feasibility Study Investigation (FFSI) report (Golder, 1997). The FFS also included a laboratory bench-scale treatability study (Kiber, 2000) to evaluate in-situ treatment/stabilization options to remedy the delineated sludge Hot Spot area.

On August 12, 2002, USEPA issued a ROD for the OU-2 Remedy, selecting the final remedy for the surficial fill materials and shallow groundwater, as described below.

Subsequently, a Consent Decree, between USEPA and the Group, was lodged on July 14, 2004, with an effective date of September 30, 2004, for the implementation of the OU-2 Remedy.

On May 8, 2007, a Final Design Report (FDR) for the OU-2 Remedy was submitted to USEPA in accordance with the Consent Decree for the OU-2 Remedy, which was approved by USEPA on June 26, 2007.

In summary, the FDR indicated that the OU-2 Remedy would involve the following remedial construction activities:

- Cover System: Replacement of the existing 80-mil geomembrane barrier with a new multi-layered (i.e., double containment) cover system
- Stream Bank Enhancements: Partial removal of the existing sheet pile wall, and installation of a new sheet pile wall along Peach Island Creek
- In-situ Treatment of Hot Spot: Remediation of the delineated Hot Spot area on-Site utilizing a combination of in-situ air stripping (ISAS) and in-situ stabilization/solidification (ISS) techniques
- Enhanced Groundwater Recovery System: Removal of the existing groundwater recovery system, and construction of a new groundwater recovery (i.e., extraction) system on-Site

Furthermore, the August 12, 2002 ROD provided for the removal (i.e., excavation and off-Site disposal) of a delineated Hot Spot area, as described in Alternative SC-3 of the ROD, if the planned in-situ treatment technologies (i.e., ISAS/ISS) could not achieve the ROD-stipulated performance criteria.

## 1.2 Project Participants

The following sections provide descriptions of selected “key” project participants involved with the implementation of the OU-2 Remedy. See Figure 3 for a project organization chart showing additional participants involved with the implementation of the OU-2 Remedy. See Section 11.0 herein for contact information for selected “key” project participants.



### **1.2.1 USEPA Remedial Project Manager**

USEPA's designated Remedial Project Managers (RPMs) maintained primary communications with/between the Group Representative and the Remedial Designer (RD). In addition, USEPA's RPMs coordinated communications with/between NJDEP, the Borough of Carlstadt, and the public, as appropriate.

The United States Army Corps of Engineers (USACE) served as USEPA's designated on-Site representatives, and said USACE representatives, reporting to the USEPA RPMs.

USEPA's RPMs attended each pre-construction and weekly progress meetings with the RD, Quality Assurance Official (QAO), and remedial action contractors (RACs). Furthermore, the USEPA RPMs, were copied on project communications, notices, meeting minutes, and reports in connection with the OU-2 Remedy, as appropriate.

### **1.2.2 The Group Representative**

The Group's designated Project/Facility Coordinator served as the Group Representative, and acted as a liaison between the Group, USEPA, the RD, and the RACs. In summary, the Group Representative's responsibilities include, but were not limited to, the following:

- Facilitate communications with/between USEPA's RPM, the Group, and the RD, QAO, and RACs, as necessary
- Approve/disapprove, with concurrence from USEPA, any significant (i.e., major) changes that differ from the FDR and Contract Documents
- Resolve design clarifications or interpretations with/between the RD and RACs, as necessary

The Group Representative also designated a project-specific Construction Manager (CM) to assist with the administration of the RAC construction contracts. The CM was responsible for interfacing and negotiating directly with the RACs, on behalf of the Group Representative, focusing on contractual, financial, and schedule aspects of the project.

### **1.2.3 Remedial Designer**

The RD was engaged throughout implementation of the OU-2 Remedy. In summary, the responsibilities of the RD included, but were not limited to, the following:

- Preside at and prepare meeting agenda and minutes, including pre-construction and weekly progress meetings, as required
- Monitor and coordinate construction activities to verify that they were performed in accordance with the Contract Documents



- Review and respond to construction submittals, shop drawings, and requests for information (RFIs) from the RACs, and coordinate with the RACs to incorporate relevant review comments, as appropriate
- Review and approve design, specification, and material changes, as required
- Prepare periodic construction progress reports for distribution to USEPA

#### **1.2.4 Quality Assurance Official**

The QAO was engaged throughout implementation of the OU-2 Remedy. In summary, the responsibilities of the QAO included, but were not limited to, the following:

- Review construction drawings, specifications, work plans, and submittals to verify compliance with the approved Construction Quality Assurance Plan (CQAP) requirements
- Review, in conjunction with the RD, corrective measures to be implemented during construction when deviations from the CQAP occurred
- Monitor remedial construction activities to ensure that testing and documentation were completed in accordance with the Contract Documents
- Report any identified deficiencies not satisfactorily corrected to the Remedial Designer

#### **1.2.5 Remedial Action Contractors**

For the implementation of the OU-2 Remedy, the Group entered into and executed two (2) separate construction Contract Agreements with the following RACs:

- ENTACT, LLC (ENTACT) of Friendswood, Texas
- Compass Environmental, Inc. (d/b/a WRScompass) of Tampa, Florida.

Initially, the Group executed a construction contract with ENTACT for the implementation of the OU-2 Remedy, including performance of the specified in-situ treatment (i.e., ISAS and ISS activities) of the delineated sludge Hot Spot.

However, following completion of a pilot-scale field verification program (FVP), it was determined that the specified ISAS/ISS treatment technologies could not achieve the ROD-stipulated performance criteria within reasonable amounts of time, and the Group retained the services of WRScompass to perform the required Hot Spot removal activities, as stipulated by the ROD.

Both ENTACT and WRScompass engaged subcontractors to assist with their respective scopes-of-work including, but not limited to, surveyors, geosynthetic installers, drillers, waste material transporters, disposal facilities, and analytical testing laboratories.

Overall, both ENTACT and WRScompass and their respective subcontractors were responsible for: a) physically implementing portions of the OU-2 Remedy; b) performing required QC testing; and c)



implementing and maintaining Site-wide Health & Safety (H&S) procedures, in accordance with their respective project-specific Health & Safety Plans (HASPs) for the OU-2 Remedy.

Remedial construction activities performed on-Site were under the direct supervision of ENTACT's and WRScompass' designated Site superintendents and field managers, who were on-Site on a full-time basis.

### 1.3 Report Organization

The purpose of this RAR is to summarize and document the implementation of the approved OU-2 Remedy. Hence, this RAR has been generally organized as follows:

- Construction Activities (Section 2.0)
- Remedial Design Modifications (Section 3.0)
- Chronology of Events (Section 4.0)
- Performance Standards and Quality Control (Section 5.0)
- Pre-Final and Final Inspections (Section 6.0)
- Certification (Section 7.0)
- Operation and Maintenance (Section 8.0)
- Summary of Construction Costs (Section 9.0)
- Observations and Lessons Learned (Section 10.0)
- Contact Information (Section 11.0)
- References (Section 12.0)



## 2.0 CONSTRUCTION ACTIVITIES

Remedial construction activities in connection with the OU-2 Remedy commenced on April 4, 2008, and were substantially completed by July 22, 2011. During this period, there were two (2) separate “*interim shutdown*” periods<sup>2</sup>, during which remedial construction activities on-Site temporarily ceased and the respective RACs demobilized from the Site.

All remedial construction activities were undertaken in accordance with the respective RACs project-specific construction work plans (CWPs) and health and safety plans (HASPs), which were incorporated into the approved Remedial Action Work Plan (RAWP), dated June 27, 2007, and RAWP Addendum, dated August 12, 2010, for the OU-2 Remedy.

Construction of the new cover system required the removal and disposal of the existing 80-mil geomembrane barrier, which was disposed of, following USEPA concurrence, off-Site at the Waste Management, Inc. (WMI) GROWS and GROWS North and Tullytown Landfills in Morrisville and Tullytown, Pennsylvania.

By July 22, 2011, the OU-2 Remedy was substantially completed with the only exception being that about two (2) acres of new soil cover remain to be seeded, per the Contract Documents. Subsequently, these remaining seeding activities were completed, by ENTACT, on September 28, 2011.

Overall, the implementation of the OU-2 Remedy was governed by the construction drawings and specifications presented within the approved FDR.

### 2.1 Contract Procurement and Mobilization

As previously noted, implementation of the OU-2 Remedy was completed in two (2) separate phases (i.e., OU-2 Remedy and Hot Spot Excavation Project), and utilized the combined efforts of the following RACs:

- ENTACT, LLC (ENTACT) of Friendswood, Texas
- Compass Environmental, Inc. (d/b/a WRScompass) of Tampa, Florida

In February 2008, the Group entered into a construction contract with ENTACT to implement the OU-2 Remedy, and ENTACT mobilized on-Site to commence remedial construction activities in April 2008. Following completion of a portion of the OU-2 Remedy, remedial construction activities on-Site entered an “*interim shutdown*” period, and ENTACT demobilized from the Site in March 2009.

<sup>2</sup> The first “*interim shutdown*” period (i.e., March 6, 2009 to July 6, 2010) was due to: a) the onset of winter; b) the need to develop and prepare new Hot Spot removal construction documents; and c) time needed to solicit and award a new remedial construction contract for the ROD-stipulated Hot Spot removal activities. The second “*interim shutdown*” period (i.e., November 24, 2010 to April 4, 2011) was due to: a) the onset of winter; and b) wet weather conditions in early spring 2011, which limited ENTACT’s ability to remobilize on-Site to complete its remaining remedial construction activities.





By March 2009, ENTACT had substantially completed the following OU-2 Remedy remedial construction activities on-Site:

- Removed the existing construction trailer on-Site
- Installed the new steel sheet pile wall along Peach Island Creek
- Demolished the existing single-story building on-Site
- Completed the specified Hot Spot in-situ treatment FVP
- Decommissioned the existing groundwater recovery system, including demolition of the groundwater extraction and monitoring wells, above-ground conveyance header system, and 10,000-gallon Above-ground Storage Tank (AST) on-Site
- Installed the new groundwater recovery (i.e., extraction) system, including installation of the new groundwater extraction wells, well vaults, carrier pipes, and pneumatic and discharge header lines
- Constructed the new maintenance building, which houses the new 5,000-gallon AST and associated groundwater extraction system controls and equipment (e.g., air compressor)
- Installed eighteen (18) of nineteen (19) new piezometers (note: the 19<sup>th</sup> piezometer was installed in June 2011)
- Partially constructed (i.e., about 70 %) the new cover system including: a) installation of the specified geosynthetic materials; b) placement of grading fill, cover soil, and topsoil materials; c) seeding activities; and d) construction of the specified perimeter drainage channels and access roads atop the new cover system
- Removed, replaced, and repaired the Site's perimeter security fence, including installation of two (2) new entrance gates to the property

In February 2010, the Group entered into a separate construction contract with WRScompass to complete the ROD-stipulated Hot Spot removal activities, and WRScompass mobilized on-Site to commence Hot Spot removal activities in July 2010. Subsequently, intrusive Hot Spot excavation activities were completed by October 2010.

In November 2010, remedial construction on-Site entered an *"interim shutdown"* period, and WRScompass demobilized from the Site.

In April 2011, ENTACT re-mobilized on-Site to complete its remaining remedial construction activities on-Site, and achieved substantial completion and demobilized from the Site in July 2011.

Upon mobilization on-Site, both ENTACT and WRScompass performed Site preparation activities including, but not limited to, the following:

- Provided field offices on-Site, including sanitary facilities
- Installed and maintained the required temporary soil erosion and sediment controls (e.g., hay bails at discharge weirs), per Bergen County Soil Conservation District (BCSCD) requirements



- Established field surveying and health and safety controls
- Performed clearing and grubbing activities

Subsequent sections of this report provide additional descriptions, information, and details with respect to the various remedial construction activities on-Site.

## 2.2 Overview of OU-2 Remedy

The following sections summarize and describe the remedial design components constructed at the Site, as part of the OU-2 Remedy.

### 2.2.1 Cover System

As part of the OU-2 Remedy, a new 2-foot-thick “double containment” cover system was constructed to replace the existing, exposed 80-mil geomembrane, which was constructed as part of the OU-1 Interim Remedy.

Since the new cover system encompasses the entire area circumscribed by the perimeter slurry wall (see Figure 2), a systematic, sequential approach was adopted to facilitate construction of the new cover system, whereby the Site was divided into six (6) distinct areas or segments (i.e., Segments A through F) with a central construction access road extended from the main entrance gate to the new sheet pile wall.

The new cover system included the following components from bottom to top:

- Grading Layer: grading fill was placed atop the historic fill materials to attain subgrade levels, grades, and elevations and support the new cover system. In general, grading fill thicknesses varied across the Site from about six (6) inches to five (5) feet to establish the new cover system grades. See Figure 4 for representative cross-sections through the constructed cover systems. Also, see Appendix A for construction as-built documentation, including existing and top of grading fill ground surface contours.
- Geosynthetic Clay Layer (GCL): a GCL (i.e., CETCO Bentomat product) was placed atop the grading layer to provide a low hydraulic conductivity containment barrier (secondary barrier).
- Geomembrane Layer: a 40-mil, textured geomembrane (i.e., GSE Ultraflex product) was placed atop the GCL to provide a low hydraulic conductivity containment barrier (primary barrier).
- Drainage Layer: a geo-composite drainage layer (i.e., Ploy-Flex double-sided, 6-oz geocomposite with 250-mil geonet product) was placed atop the 40-mil geomembrane layer to provide filtration and lateral drainage.
- Cover Layer: an 18-inch-thick (min.) soil cover was placed atop the geocomposite drainage layer to protect the underlying geomembrane and drainage layers.
- Vegetative Support Layer: a 6-inch-thick (min.) layer of topsoil was placed atop the cover layer, and this topsoil layer was seeded and fertilized to establish a vegetative cover to control erosion of the cap.



See the FDR for material specifications and placement requirements for the above noted grading fill, cover soil, and vegetative support layer materials.

For construction of the new cover system, ENTACT subcontracted with CETCO Contracting Services, Inc. (CETCO) of Trevese, Pennsylvania for the installation of the required geosynthetic materials (i.e., GCL, geomembrane, and geo-composite drainage layer).

In addition, the following design components were integrated into the new cover system:

- Access Roads: Following placement of the specified cover soils, 15-foot-wide access roads were constructed atop the new cover system (see Figures 3 and 4), which were comprised of 6-inch (min.) dense graded aggregate (DGA) placed atop the previously placed cover soils and underlain by a woven geotextile geofabric (i.e., Mirafi 500X).
- Perimeter Drainage Channels: As part of the new cover system, a new surface water management system, including perimeter drainage channels, culverts, and discharge weirs, through the new sheet pile wall, were constructed. Per the FDR, the perimeter drainage channels were to be lined with 6-inch (min.) of rip-rap with median (i.e.,  $d_{50}$ ) particle sizes of 3-inch.

However, BCSCD requested that these perimeter drainage channels be lined with 12-inch (min.) of rip-rap with median particle sizes of 6-inch. The Group agreed to comply with BCSCD's request.

After remedial construction activities for the OU-2 Remedy commenced on-Site, PCBs were identified in the surficial, shallow fill soils between the existing geomembrane, installed as part of the OU-1 Interim Remedy and the adjacent property line along Paterson Plank Road. USEPA, therefore, required additional soil sampling to delineate the extent of impacted on-property surficial, shallow fill soils.

Overall, it was not determined whether the identified PCB impacted surficial fill soils were, or were not, Site-related. However, a remedial action plan to address the impacted surficial fill soils, between the existing geomembrane and the adjacent property line along Paterson Plank Road, was developed and approved by USEPA. This remedial action plan included the following additional remedial construction activities, which were completed as part of the OU-2 Remedy:

- Clearing and grubbing of vegetation and topsoil materials, which were disposed of, following USEPA concurrence, off-Site at the EQ Wayne Landfill in Bellville, Michigan
- Excavating the underlying fill materials to depths of 12-inch (typ.) beneath the existing ground surface elevations; these materials were then consolidated on-site beneath the new cover system
- Placing new woven geotextile fabric (i.e., Mirafi 500X) atop the excavated subgrade surfaces, which served as a demarcation between the new stone aggregate cover and the underlying fill materials
- Placing 12-inch (min.) stone aggregate (i.e., AASHTO No. 3 stone) within the excavated areas to re-establish the pre-existing ground surface elevations



See Figures 2, 4, and 5 for additional information and details relative to the constructed soil and stone aggregate cover systems, stormwater management system, and perimeter access roads. See Appendix A for construction as-built documentation.

### **2.2.2 Stream Bank Enhancements**

During construction of the OU-1 Interim Remedy, a steel sheet pile wall was installed along Peach Island Creek to facilitate construction of the perimeter slurry wall. However, following the initial construction, sections of this sheet pile wall moved (i.e., translated and/or rotated), under the applied construction loads, and a series of steel H-piles had been installed, as part of the OU-1 Interim Remedy, to further buttress and stabilize sections of the wall.

The FDR for the OU-2 Remedy required that this pre-existing sheet pile wall be replaced by a new steel sheet pile wall, which would be installed between the perimeter slurry wall and the pre-existing sheet pile wall. This new sheet pile wall was also driven into the underlying glacial till stratum.

Per the FDR, the new sheet pile wall was to be constructed using AZ-18 sheet pile sections. However, ENTACT proposed using an alternative XZ-95 sheet pile sections, on an “as equal” basis. Subsequently, the RD accepted ENTACT’s proposed alternate sheet pile section, given the material properties of the proposed XZ-95 sheet piling were equivalent to that of the specified AZ-18 sheet pile section.

In general, ENTACT installed the new sheet pile wall in accordance with their Sheet Pile Wall Installation Work Plan, dated May 22, 2008, utilizing an American 100-ton (Model 7260) track-mounted, lattice-type boom crane in combination with a Hammer and Steel (H&S) vibratory driver/extractor (Model 4450). This crane also operated from an access pad/road offset about forty (40) feet behind the existing slurry wall.

Once the new sheet pile wall was installed, the existing sheet pile wall (and its associated steel H-pile buttresses) were partially demolished and removed (i.e., cut at low water level in Peach Island Creek), and the fill materials between the two sheet pile walls were excavated and consolidated beneath the new cover system on-Site.

The FDR also required that rip-rap, with a median particle size of 3-inch, be placed at the excavated subgrade between the new and old sheet pile walls. However, BCSCD requested that the rip-rap placed between the two sheet pile walls have a median particle size of 6-inch. The Group agreed to BCSCD’s request.

Per the FDR, six (6) discharge weirs, with inverts at about elevation El. +2.0 feet (NAVD88), were constructed through the new sheet pile wall to allow surface water runoff, collected in and conveyed through the new perimeter drainage channels, to discharge into Peach Island Creek. The inverts of these



discharge weirs were situated about three (3) feet above the rip-rap material placed in front of the new sheet pile wall.

In addition, BCSCD requested that a series of stone-filled gabion baskets be placed in front of each discharge weir to serve as an energy-absorbing feature and further mitigate erosion and/or scour in front of the discharge weirs. The Group agreed to BCSCD's request.

See Appendix A for construction as-built documentation. See Appendix B for sheet pile wall installation records.

### **2.2.3 Hot Spot Activities**

Per the FDR, the delineated sludge Hot Spot was to be remediated utilizing a combination of ISAS and ISS in-situ treatment technologies. In addition, the FDR required that a pilot-scale FVP be performed to demonstrate that in-situ treatment technologies could achieve the ROD-stipulated performance criteria. Furthermore, ENTACT obtained the requisite NJDEP air quality discharge permit to facilitate performance of this FVP and any subsequent ISAS/ISS activities on-Site.

In September 2008, ENTACT mobilized and performed the specified pilot-scale FVP. However, upon completion of this FVP, it was determined the specified ISAS activities could not achieve the ROD-stipulated performance criteria (i.e., total VOC concentrations less than 1,280 ppm) within a reasonable period of time.

After upwards of 16 hours of ISAS mixing, total VOC levels remained about 2.5 to 3 times higher than the stipulated performance criteria. Modifications to the specified in-situ treatment process were attempted, including the introduction of pelletized lime into the mixing process to increase in-situ temperatures and the volatilization of contaminants from the Hot Spot materials. However, it was found that the rate of lime addition was difficult to control, and excess heat was generated leading to a potentially unsafe situation.

Therefore, the Group, in consultation with USEPA, discontinued in-situ treatment activities on-Site, and instead worked toward the implementation of the ROD-stipulated Hot Spot removal (i.e., excavation and off-Site disposal) alternative (i.e., Alternative SC-3 of the ROD).

Golder prepared, on behalf of the Group, a new set of Contract Documents for the required Hot Spot removal activities, and this work was re-bid to a group of selected, qualified RACs.

In February 2010, the Group entered into a construction contract with WRScompass to complete the ROD-stipulated Hot Spot removal (i.e., excavation and off-Site disposal) activities, and WRScompass mobilized on-Site to commence Hot Spot removal activities in July 2010.



In summary, implementation of the Hot Spot removal activities involved the following remedial construction activities:

- Preparation of and obtaining the requisite NJDEP air quality discharge permit.
- Installation and removal of a pre-engineered, temporary air containment structure (ACS), which encompassed the delineated sludge Hot Spot area.
- Installation and removal of an air handling, treatment, and discharge system, which consisted of activated carbon units, filters, fans/blowers, ductwork, and discharge stacks. Power for this system was run from a new local (i.e., PSE&G) utility service established in the northern corner of the Site, including running an electrical conduit from the northern corner of the property along the new sheet pile wall and around the installed temporary ACS.
- Excavation, stabilization, handling, transport, and off-Site disposal of sludge and historic fill materials excavated from within the delineated Hot Spot area. WRScompass utilized a series of small footprint, internally braced trench boxes to facilitate and advance these excavation activities. Excavated depths typically varied between seven (7) and fifteen (15) feet below the existing ground surface. See Figure 6 for a cross-section through the Hot Spot excavation area. Also, see Appendix A for construction as-built documentation, which includes Hot Spot excavation bottom elevations across the footprint of the delineated Hot Spot area.
- Placement of a combination of DGA and AASHTO No. 57 stone aggregate materials to infill the Hot Spot excavation.

Overall, WRScompass excavated about 3,400 tons of sludge and fill materials from within the footprint of the delineated sludge Hot Spot area. These excavated materials were also stabilized with sawdust for moisture control, and placed within lined, sealed intermodal containers (IMCs) on-Site. After each IMC was filled, sealed, and inspected on-Site, the IMCs were transported<sup>3</sup> from the Site to Clean Harbors' Aragonite disposal facility in Utah.

See Figure 6 for a Hot Spot removal plan and cross-section, which shows the limits of the ROD-stipulated Hot Spot removal relative to the constructed cover system. See Appendix A for construction as-built documentation. See Appendix L for Hot Spot removal documentation.

#### **2.2.4 Enhanced Groundwater Recovery System**

As part of the OU-2 Remedy, the existing groundwater recovery system, including its wells, storage tank, above-ground discharge headers, and control systems, were removed, and a new, enhanced groundwater recovery (i.e., extraction) system was constructed on-Site, which included the following components:

- Extraction System: Ten (10) 1-foot-diameter wells equipped with pneumatic-operated submersible pumps (i.e., Model AP-4 AutoPump manufactured by QED Environmental

<sup>3</sup> Per the approved RAWP Addendum, dated August 12, 2010, the loaded IMCs were transported by truck from the Site to the Brills rail yard in Newark, New Jersey, where the IMCs were transferred onto double-stacked rail cars for transportation to the approved Clean Harbors' Aragonite disposal facility in Utah.



Systems of West Orange, New Jersey) installed along the Site perimeter to extract groundwater and maintain hydraulic controls across the perimeter slurry wall. The air compressor and controls to operate these pumps are housed within a new maintenance building on-Site.

- Conveyance and Storage Systems: Each submersible pump discharges into a single, combined discharge header system, which in turn discharges into a new 5,000-gallon AST housed inside the new maintenance building. The pneumatic air supply and discharge header lines are contained within carrier pipes, which run between each extraction well and the new maintenance building. The AST is equipped with redundant controls to shut-off the groundwater recovery system, and the AST contents are periodically transferred into vacuum tanker trucks for off-Site disposal.
- Monitoring System: Seven (7) exterior and twelve (12) interior piezometers installed along the Site perimeter to monitor water levels on opposite sides of the perimeter slurry wall.
- Maintenance Building: A new, pre-engineered structure was designed and constructed, by ENTACT and its subcontractors, to house the above noted AST and the new groundwater extraction system's controls. In addition, this structure includes sanitary facilities (e.g., toilet and sink) and H&S systems (e.g., shower and eye wash).

See Figures 7 and 8 for groundwater recovery system plans and details, which show the layout and configuration of the new groundwater extraction, conveyance, and monitoring components. See Appendix A for construction as-built documentation.

As part of the OU-2 Remedy, a dilapidated single-story building on-Site was demolished to make room for the new maintenance building. Demolition debris materials were tested and disposed of off-Site, following USEPA concurrence. Non-impacted (i.e., non-contaminated) demolition debris materials were disposed of at the New Jersey Meadowlands Commission municipal landfill in North Arlington, New Jersey. In addition, asbestos-impacted demolition materials were disposed of at the IESI Corporation Bethlehem Landfill in Bethlehem, Pennsylvania. ENTACT incorporated the foundations from the former building into the design of the new maintenance building.

On May 18, 2009, the newly installed enhanced groundwater extraction system was brought on-line. As of August 31, 2011, a summary of the extracted groundwater volumes is as follows:

- Volume extracted, disposed, since May 18, 2009 = 785,602 gallons
- Volume extracted, disposed in 2009 = 401,498 gallons
- Volume extracted, disposed in 2010 = 286,390 gallons
- Volume extracted, disposed in 2011 = 97,714 gallons

By the fall of 2010, it was apparent that the new groundwater recovery system's originally installed 1.5-hp reciprocating-piston air compressor was approaching or at the end of its operational duty (i.e., life) cycle, and would require replacement. In July 2011, the original air compressor was replaced with a new 5-hp





rotary-screw air compressor (i.e., Ingersoll Rand Model UP6-5TAS), and this new air compressor was brought on-line on July 7, 2011.

## 2.3 Health and Safety

ENTACT and WRScompass each developed their own, separate project-specific Health and Safety Plans (HASPs), which addressed and focused on their specific scopes-of-work. These HASPs were incorporated into the RAWP and RAWP Addendum for the OU-2 Remedy. ENTACT and WRScompass provided full-time on-Site Health and Safety Officers (SHSO), who were charged with executing their respective H&S programs.

Upon mobilization to the Site, all construction personnel, subcontractors, and visitors were required to:

- Read, implement, and comply with the requirements contained within the respective HASP for the work to be performed.
- Become familiar with identified or potential H&S hazards (e.g., physical, chemical, and biological hazards) on-Site.
- Possess the requisite H&S training (e.g., 40-hour HAZWOPER and 8-hour refresher training), and provide copies of training documentation (e.g., certificates) and medical clearance paperwork.
- Participate in daily safety briefings (i.e., tailgate meetings).
- Be alert to the hazards associated with the work to be performed, take all reasonable precautions to prevent injury to themselves and their co-workers, and use common sense and exercise reasonable caution at all times.

Overall, ENTACT and WRScompass worked a combined total of about 45,200 labor-hours on-Site without an Occupational Safety and Health Administration (OSHA) reportable, recordable accident, injury, or incident. Site activities included work in Level B, C, and D personal protective equipment (PPE).

During remedial construction activities on-Site, both ENTACT and WRScompass were required to establish, perform, and maintain perimeter and activity-specific air monitoring on-Site, which included, but was not limited to, the following equipment:

- Multi-gas meters (only used by WRScompass)
- Photoionization Detectors (PID)
- Dust Particulate Monitors

Based on the collected air monitoring data, there were no reported exceedences of the established air monitoring action levels, as stipulated in ENTACT's and WRScompass' project-specific HASPs.





## 2.4 Imported Fill

As part of the OU-2 Remedy, quantities of imported fill materials, based on weigh tickets for each truckload of material delivered to the Site, were as follows:

- Grading Fill = 21,057 tons
- Cover Soil = 6,956 tons
- Vegetative Support Layer Material (i.e., topsoil) = 7,654 tons
- Bedding Sand = 498 tons
- Dense Graded Aggregate (DGA) = 6,956 tons
- AASHTO No. 57 Stone Aggregate = 571 tons
- AASHTO No. 3 Stone Aggregate = 1,416 tons
- 6-inch Rip Rap = 2,140 tons

Golder collected and performed QA conformance testing (i.e., geotechnical and analytical testing) on each borrow source, and solicited and obtained USEPA's approval of each borrow source, which was documented in the weekly progress meeting minutes (see Section 2.6 herein).

See Appendix C for imported fill documentation including, but not limited to, names of borrow sources and a tabularized list of each load of imported fill delivered and accepted on-Site. See Appendix D for QA analytical laboratory testing results.

## 2.5 Waste Disposal

As part of the OU-2 Remedy, the RACs transported and disposed of the following types of waste materials at the identified off-Site disposal facilities:

- New Jersey Meadowlands Commission (100 Baler Blvd., North Arlington, NJ 07031): Materials disposed of at this facility included non-impacted construction and demolition (C&D) waste materials (e.g., scrap geosynthetic materials)
- Veolia Environmental Services (27-33 Iowa Ave., Paterson NJ 07503): Materials disposed of at this facility included miscellaneous office waste materials
- IESI Corporation Bethlehem Landfill (2335 Applebutter Road, Bethlehem, PA 18015): Materials disposed of at this facility included asbestos-impacted waste materials generated as part of the building demolition activities on-Site
- WMI GROWS Landfill (1513 Bordentown Rd., Morrisville, PA 19067): Materials disposed of at this facility included: a) existing 80-mil geomembrane and non-woven cushion materials; b) vegetation cleared from inside the perimeter fence line; c) C&D materials; and d) the existing groundwater recovery system material, which were removed as part of the OU-2 Remedy
- WMI GROWS North Landfill (1000 New Ford Mill Rd., Morrisville, PA 19067): Materials disposed of at this facility included: a) existing 80-mil geomembrane and non-woven cushion materials; b) C&D materials; and c) investigation derived waste (IDW) materials,



generated in connection with additional investigations in connection with the project but not related to the OU-2 Remedy

- WMI Tullytown Landfill (200 Bordentown Road, Tullytown, PA 19007): Materials disposed of at this facility included: a) existing 80-mil geomembrane and non-woven cushion materials; b) vegetation cleared from inside the perimeter fence line; c) C&D materials; and d) the existing groundwater recovery system material, which were removed as part of the OU-2 Remedy
- Sims Metal Management (Foot of Hawkins St. & 182 Calcutta St., Newark, NJ 07105): Materials disposed of at this facility included decontaminated scrap metals from the demolished existing 10,000-gallon AST and steel sheet pile wall
- EQ Wayne Landfill (49350 N I-94 Service Dr., Belleville, MI 48111): Materials disposed of at this facility included PCB impacted materials from: a) excavated concrete and metal debris from the Hot Spot removal area; and b) vegetation and soils from the additional on-property remedial construction activities, between the installed geomembrane and the adjacent property line along Paterson Plank Road (see Figure 3)
- Clean Harbors Aragonite Incineration Facility (11600 North Aptus Rd., Dugway, UT 84029): Materials disposed of at this facility included fill and sludge materials excavated from the Hot Spot removal area
- Clean Harbors Deer Park Incineration Facility (2027 Battleground Rd., La Porte, TX 77571): Materials disposed of at this facility included PCB-contaminated decontamination fluids generated in connection with the Hot Spot removal activities
- DuPont Secure Environmental Treatment (SET) Facility (Route 130, Deepwater, NJ 08023): Materials disposed of at this facility included: a) waste fluids extracted by the new groundwater recovery system, and contained within the new 5,000-gallon AST on-Site; and b) decontamination fluids generated by ENTACT on-Site
- Siemens Water Technologies Corp. (118 Park Rd., Darlington, PA 16115): Used (i.e., spent) activated carbon materials from the Hot Spot in-situ treatment FVP were shipped to this facility for regeneration (i.e. recycled)
- Carbon Activated Corp. (3774 Hoover Rd., Blasdell, New York 14219): Used activated carbon materials from the Hot Spot Excavation Project were shipped to this facility for regeneration

See Appendix E for off-Site waste disposal (e.g., non-hazardous and hazardous waste manifests) documentation.

Prior to disposing of any waste materials off-Site, USEPA approval of the associated disposal facilities was obtained, as noted above. All regulated waste materials transported off-Site for disposal were shipped utilizing duly prepared and signed non-hazardous or hazardous waste manifests, as appropriate.

## 2.6 Meetings, Documentation, and Recordkeeping

### 2.6.1 Meetings

Per the RAWP, dated June 27, 2007, and RAWP Addendum, dated August 12, 2010, the following meetings were convened in connection with the OU-2 Remedy:



- On April 4, 2008, a pre-construction “kick off” meeting was convened in connection with the OU-2 Remedy at the Memorial Municipal Building in Carlstadt, New Jersey
- On May 5, 2010, a pre-construction “kick off” meeting was convened in connection with the Hot Spot Excavation Project at the Memorial Municipal Building in Carlstadt, New Jersey
- Typically, weekly progress meetings were convened in connection with the OU-2 Remedy, and were primarily held on-Site in the field construction trailer or occasionally via conference call

In general, progress meetings were attended by representatives from USEPA, USACE, the Borough of Carlstadt, Golder, and the RAC (i.e., ENTACT or WRScompass), and Golder prepared and distributed meeting minutes to all meeting attendees.

See Appendix F for pre-construction “kick off” and progress meeting minutes in connection with the OU-2 Remedy.

### **2.6.2 Progress Reporting**

Per the RAWP, dated June 27, 2007, and RAWP Addendum, dated August 12, 2010, Golder prepared and submitted monthly progress reports to USEPA, which provided the following information:

- Health and safety update
- Actions taken in reported month
- QA/QC sampling and testing update
- Submittals update
- Actions scheduled for next month
- Schedule update
- Community Relations update
- Modifications to RAWP

These monthly progress reports also provided representative construction progress photographs taken during the reported month. In addition, after May 18, 2009, these monthly reports included: a) summaries of the volumes extracted by the new groundwater recovery system; and b) water level plots for the new piezometers installed, as part of the OU-2 Remedy.

See Appendix G for monthly progress reports submitted to USEPA in connection with the OU-2 Remedy.

### **2.6.3 Photographic Documentation**

Per the RAWP, dated June 27, 2007, and RAWP Addendum, dated August 12, 2010, Golder and the RACs (i.e., ENTACT and WRScompass) collected in excess of 9,000 construction progress photographs



and videos to document the progress of work, identified problems, and corrective measures taken for any identified problems.

See Appendix H for selected, representative progress photographs documenting, in chronological order, the remedial construction activities performed on-Site.

#### **2.6.4 Recordkeeping**

All construction project files, records, and documentation (e.g., correspondence, electronic mail, reports, meeting minutes, contract documents, submittals, record drawings, QA/QC testing data, waste manifests, and field books) in connection with the OU-2 Remedy will be maintained and kept by Golder, on behalf of the Group, at the following location:

Golder Associates Inc.  
744 Broad Street, 25<sup>th</sup> Floor, Suite 2500  
Newark, New Jersey 07102  
Phone: (973) 645-1922  
Fax: (973) 645-1588  
Attn: Mark F. McNeilly, P.E., D.GE



### 3.0 REMEDIAL DESIGN MODIFICATIONS

Overall, Golder believes the OU-2 Remedy was completed in compliance with the Contract Documents (i.e., construction drawings and technical specifications), as presented in the approved FDR. However, there were occasional needs, based on field conditions, to modify and/or clarify said Contract Documents.

Clarifications and modifications (i.e., field design changes) to the Contract Documents were discussed during weekly progress meetings, with USEPA, USACE, and the RACs, and discussions were summarized and documented in the weekly progress meeting minutes (see Appendix F) and monthly progress reports (see Appendix G).

In summary, modifications to the Contract Documents included the following:

- **General:** As noted previously, USEPA requested that additional on-property (i.e., area between installed geomembrane and the adjacent property line along Paterson Plank Road) soil sampling be performed to further delineate the extent of impacted soils on-Site. Subsequently, it was established that these impacted soils would be remediated by removal and the construction of an additional stone aggregate cover system.
- **Grading and Drainage Plan:** Based on actual field conditions, this plan was modified as follows:
  - Due to Site constraints (e.g., existing ground surface elevations and locations of perimeter slurry wall relative to the surface water drainage channel centerline) around the perimeter of the new 40-mil geomembrane, the final ground surface contours of the new cover system were constructed higher, by about 2 to 4 feet, than that shown in the FDR (see Figure 2). This deviation could not be avoided without adversely impacting the adjacent perimeter slurry wall.
  - The access road area directly adjacent to the main entrance to the Site was expanded to provide additional room for vehicles to access the Site and turn around.
  - Areas between the installed, new 40-mil geomembrane and the adjacent fence line were cleared and grubbed, and 12-inch (typ.) of rip-rap with a median particle size of 6-inch was placed atop non-woven geofabric materials.
- **Grading and Drainage Details:** Based on actual field conditions, these details were modified as follows:
  - The specified GCL was placed atop either: a) 6-inch (min.) grading fill; or b) a layer of non-woven geofabric placed atop the exposed subgrade surfaces.
  - In areas where the specified 40-mil geomembrane was placed directly atop the exposed subgrade surfaces (i.e., beyond the lateral extents of the underlying GCL), a layer of non-woven geofabric was placed beneath said geomembrane. Furthermore, this condition only applied within the out portions of the constructed perimeter drainage channels.
  - Per a BCSCD request, the specified 6-inch (min.) of rip-rap with median particle size of 3-inch was replaced by 12-inch (min.) of rip-rap with median particle size of 6-inch.



- Actual perimeter drainage channel side slope configurations were controlled by Site constraints (e.g., locations of perimeter slurry wall relative to channel centerline). Hence, there are locations where the perimeter drainage channel side slopes are steeper than that specified on this drawing, because flatter slopes were not possible without adversely impacting the adjacent perimeter slurry wall.
- In-situ Hot Spot Treatment Plan and Details: Given the FVP could not achieve the required performance criteria, the Group implemented the ROD-stipulated Hot Spot removal activities, which were incorporated into a new, separate set of Contract Documents for the Hot Spot Excavation Project.
- Groundwater Recovery System Plan: The design showed the carrier pipes crossing a perimeter drainage channel at extraction well EW-05 (i.e., west corner of Site). However, during construction, this carrier pipe crossing was relocated from EW-05 to EW-06, due to Site constraints.
- Sheet Pile Wall Plan, Sections, and Details: AZ-18 sheet pile sections were specified for the new sheet pile wall. However, ENTACT proposed using alternative XZ-95 sheet pile sections, and provided design computations to support the equivalency of the alternative design condition.
- Discharge Weirs: Per a BCSCD request, additional 3-foot-square, stone-filled gabion baskets were installed in front of each discharge weir to Peach Island Creek.
- Demolition Plan: The existing double swing gate at the main entrance to the Site was demolished and replaced. In addition, ENTACT inadvertently demolished the fencing around the west and south sides of the existing 10,000-gallon AST on-Site, rather than the fencing on the north and east sides of this AST. Rather than reinstall this fencing to comply with the Contract Documents, the RD accepted this field condition, and did not require further corrective measures.
- Fence Restoration Plan: New entrance gates were installed at the eastern end/limit of the new sheet pile wall to provide access to Peach Island Creek. In addition, the existing double swing gate, at the main entrance to the Site, was replaced by a new 15-foot-wide (min.) cantilevered entrance gate.
- Specification Section No. 11372: The two (2) 0.68-horsepower (hp) reciprocating-piston air compressors specified were replaced by a single 1.5-hp reciprocating-piston air compressor. However, this 1.5-hp air compressor exceeded its life cycle, and was subsequently replaced in July 2011. In its place, a new 5-hp rotary-screw air compressor (i.e., Ingersoll Rand Model UP6-5TAS) was installed.
- Specification Section No. 13280: The specified mechanical (i.e., float) water level meter, installed within the AST, was subsequently replaced by a new ultrasonic water level meter (i.e., Flow-Line Model LU20).
- Specification Section No. 13120: The specified 30-amp welding outlets were not installed within the new maintenance building.

The RD reviewed and accepted all of the above-noted remedial design modifications and deviations from the Contract Documents. Furthermore, Golder does not believe that the above remedial design modifications represented a significant change to the approved OU-2 Remedy.



## 4.0 CHRONOLOGY OF EVENTS

See below for a chronology of events in connection with the implementation of the OU-2 Remedy.

Date(s) / Year	Event
1980	The former Scientific Chemical Processing (SCP) Company was shut down by court order, and operations at the Site ceased
1983	Site placed on NPL
September 30, 1985	USEPA issued Administrative Orders on Consent
October 23, 1985	USEPA issued Unilateral Administrative Orders
1987 to 1990	PRPs conduct and finalize RI/FS for OU-1
September 14, 1990	USEPA issued ROD for OU-1 Interim Remedy
September 28, 1990	USEPA issued Administrative Order for implementation of the OU-1 Interim Remedy
August 1991 to June 1992	Implementation of the OU-1 Interim Remedy
June 1992 to 2011	Group performs OU-1 Interim Remedy O&M activities
1994 to 2001	Group conducts focused feasibility investigations and studies for the OU-2 Remedy
August 12, 2002	USEPA issued ROD for OU-2 Remedy
September 30, 2004	Effective date of Consent Decree for implementation of the OU-2 Remedy
April 1, 2005	Group submits Revised RDWP for the OU-2 Remedy
June 9, 2005	USEPA approved Revised RDWP for the OU-2 Remedy
May 8, 2007	Group submits FDR for OU-2 Remedy to USEPA
June 26, 2007	USEPA approved FDR for OU-2 Remedy
February 29, 2008	Group enters into a Construction Agreement with ENTACT to implement the OU-2 Remedy
April 2, 2008	Group submits draft RAWP for OU-2 Remedy to USEPA
April 16, 2008	Pre-construction Kick-off Meeting for OU-2 Remedy
April 23, 2008	USEPA conditional approval of RAWP for OU-2 Remedy
April 24, 2008	ENTACT mobilizes on-Site to commence work on OU-2 Remedy
June 20 to July 1, 2008	ENTACT installs the new steel sheet pile wall along Peach Island Creek
June 27, 2008	Group submits revised RAWP for OU-2 Remedy to USEPA
June 27, 2008	USEPA approved revised RAWP for OU-2 Remedy
September 2008	ENTACT performed the specified pilot-scale Field Verification Program (FVP) to investigate whether the proposed ISAS and ISS treatment technologies could achieve the ROD-stipulated performance criteria. Upon completion of this FVP, it was determined the specified ISAS activities could not achieve the ROD-stipulated performance criteria within a reasonable period of time. Hence, the Group discontinued in-situ treatment activities, and implemented the ROD-stipulated Hot Spot excavation and off-Site disposal alternative (i.e., Alternative SC-3 in ROD).





Date(s) / Year	Event
December 5, 2008 to February 13, 2009	ENTACT constructs new maintenance building on-Site
October 15, 2008 to February 17, 2009	ENTACT installs new extraction wells, carrier pipes, and piezometers (excluding PZ-204)
October 30 to November 6, 2008	ENTACT installs geosynthetics (i.e., GCL, geomembrane, and geo-composite drainage layer) within Segments A, B, and C of Site
January 8 to 27, 2009	ENTACT installs geosynthetics (i.e., GCL, geomembrane, and geo-composite drainage layer) within Segments D and E of Site
March 6, 2009	Construction enters an "interim shutdown" period, and ENTACT demobilizes from Site
March 11, 2009	Group submits a work plan for additional on-property (i.e., area between pre-existing 80-mil geomembrane and the property line along Paterson Plank Road) soil sampling, which was requested by and subsequently approved by USEPA
May 18, 2009	The new groundwater recovery (i.e., extraction) system is brought on-line, and periodic shipments of extracted groundwater to the DuPont Secure Environmental Treatment (SET) Facility in Deepwater, New Jersey resume
July 14, 2009	Group submits a remedial action plan for additional on-property soil excavation and construction of a stone aggregate cover system
February 10, 2010	Group enters into a Construction Agreement with WRScompass to implement the Hot Spot Excavation Project
March 12, 2010	Group submits a draft RAWP Addendum for the Hot Spot Excavation Project to USEPA
May 13, 2010	Pre-construction Kick-off Meeting for Hot Spot Excavation Project
May 17, 2010	USEPA conditional approval of RAWP Addendum for the Hot Spot Excavation Project
August 12, 2010	Group submits a revised RAWP Addendum for the Hot Spot Excavation Project to USEPA
August 17, 2010	USEPA approved revised RAWP Addendum for the Hot Spot Excavation Project
July 6, 2010	WRScompass mobilized on-Site to commence work on the Hot Spot Excavation Project
September 3, 2010	WRScompass starts intrusive Hot Spot excavation and off-Site disposal activities on-Site
September 10, 2010	USEPA approved remedial action plan for additional on-property soil excavation and construction of a stone aggregate cover system
October 19, 2010	WRScompass completes intrusive Hot Spot excavation and off-Site disposal activities
November 18, 2010	WRScompass completes the additional on-property soil excavation and stone aggregate cover system construction activities
November 24, 2010	Construction enters a second "interim shutdown" period, and WRScompass demobilized from Site
April 4, 2011	ENTACT remobilizes on-Site to complete its remaining remedial construction activities in connection with the OU-2 Remedy
June 3, 2011	ENTACT installs piezometer PZ-204
June 13 to July 5, 2011	ENTACT installs geosynthetics (i.e., GCL, geomembrane, and geo-composite drainage layer) within Segments F and central access road of Site
June 17, 2011	Group submits a draft O&M Plan for the OU-2 Remedy to USEPA
July 13, 2011	Pre-Final Inspection of the OU-2 Remedy (see Section 6.0 herein)





Date(s) / Year	Event
July 21, 2011	Final Inspection of the OU-2 Remedy (see Section 6.0 herein)
July 22, 2011	ENTACT demobilizes from Site
July 29, 2011	USEPA acknowledges that the Final Inspection was completed to their satisfaction (see Section 6.0 herein)
August 26, 2011	Group submits draft RAR for the OU-2 Remedy to USEPA
September 16, 2011	Group responds to USEPA's comments on the draft O&M Plan, dated June 17, 2011, and submits a revised O&M Plan for the OU-2 Remedy to USEPA
September 28, 2011	ENTACT remobilized on-Site to complete the remaining seeding activities
September 29, 2011	Group responds to USEPA's comments on the draft RAR, dated August 26, 2011, and submits a revised RAR for the OU-2 Remedy to USEPA
2011	Group commences OU-2 Remedy O&M activities

See Figure 9 for the remedial design/remedial action (RD/RA) project schedule, which provides additional details relative to the chronology of RD/RA activities in connection with the OU-2 Remedy.



## 5.0 PERFORMANCE STANDARDS AND QUALITY CONTROL

Remedial construction activities in connection with the OU-2 Remedy were performed in general accordance with the following OU-2 Remedy documents:

- ROD, dated August 12, 2002
- Consent Decree, effective September 30, 2004
- FDR, dated May 8, 2007, approved June 26, 2007, including the Construction Quality Assurance Plan (CQAP) for the OU-2 Remedy
- RAWP, dated and approved June 27, 2008
- RAWP Addendum, dated August 12, 2010, approved August 17, 2010
- Contract Documents (i.e., construction drawings and technical specifications)

During implementation of the OU-2 Remedy, the RACs (i.e., ENTACT and WRScompass) were responsible for the performance of the specified QC activities on-Site. Representatives of Golder were on-Site, on a full-time basis, to observe, inspect, and document the performance of remedial construction activities.

USACE personnel were also periodically on-Site, as USEPA's designated on-Site representatives, and Golder worked proactively with USEPA's on-Site representatives to: a) coordinate construction quality assurance (CQA) activities on-Site; and b) ensure that the remedial construction activities were performed to USEPA's satisfaction.

In addition, the performance and maintenance of the required CQA activities were regularly discussed, during weekly progress meetings, and presented in meeting minutes and monthly progress reports, which were distributed to USEPA and other project participants on a regular basis. See Appendices F and G for weekly progress meeting minutes and monthly progress reports, respectively.

### 5.1 Construction Quality Assurance (CQA) Program

The CQA program employed during the remedial construction activities was described and outlined within the approved RAWP and RAWP Addendum for the OU-2 Remedy. In addition, the approved RAWP and RAWP Addendum for the OU-2 Remedy included project-specific Field Sampling and Analysis Plans (FSAPs) and Quality Assurance Project Plans (QAPPs).

Furthermore, the approved CQAP, which was included as Appendix H to the FDR, established minimum CQA requirements for the remedial construction activities on-Site, and required that a series of QA/QC activities be performed to document that the project was constructed in accordance with the above noted OU-2 Remedy documents.



During the implementation of the OU-2 Remedy, Golder's on-Site representatives performed, amongst other things, the following CQA activities:

- Inspection and monitoring of remedial construction activities on-Site
- Photographic documentation of construction activities
- Identification of potential construction problems and issuance of corrective measure reports, as necessary and in coordination with the RD
- Geotechnical and analytical laboratory testing of imported fill materials
- In-place density compaction testing
- Inspection of subgrade preparation activities
- Geosynthetic material (i.e., GCL, geomembrane, and geocomposite) conformance testing
- Monitoring and testing of all installed geosynthetics, including any associated repair activities and non-destructive and destructive seam testing
- Cover soil and vegetative support layer thickness measurements
- Radioactive screening (i.e., RAD testing) of imported vegetative support layer materials, per USEPA request during implementation of the OU-2 Remedy
- Review of perimeter air monitoring and survey control data, as provided by the RACs
- Review of construction submittals and requests for information (RFIs)
- Preparation of daily and weekly construction reports

See the approved CQAP, RAWP, and RAWP Addendum for additional information and details relative to the CQA activities performed during implementation of the OU-2 Remedy.

## 5.2 CQA Documentation

During implementation of the OU-2 Remedy, voluminous CQA documentation (e.g., submittals, RFIs, daily field reports, field note books, photographs, meeting minutes, progress reports, air monitoring data, testing results, material certifications, imported fill weigh tickets, and waste manifests) was generated. Copies of CQA documentation collected, as part of the OU-2 Remedy, are contained within the overall project file, which will be kept in Golder's Newark, New Jersey office.

The following "key" CQA documentation, to illustrate that the OU-2 Remedy was completed in accordance with the above noted OU-2 Remedy documents, is appended to this RAR, as described below:

- Construction As-Built Documentation (see Appendix A)
- Sheet Pile Wall Installation Records (see Appendix B)
- Imported Fill Documentation (see Appendix C), which includes:
  - A summary table of imported fill shipments
  - Borrow source certifications
- QA Analytical Laboratory Testing Results (see Appendix D)



- Field Density and Thickness Verification Documentation (see Appendix I), which includes:
  - In-place density test results for grading fill
  - Thickness verification of cover soil
  - Thickness verification of vegetative support layer
- Extraction Well and Piezometer Records (see Appendix J)
- Geosynthetic Installation Documentation (see Appendix K), which includes:
  - Subgrade inspection forms
  - Field deployment, trial seam, and seam logs
  - Destructive and non-destructive test results
  - Defect/repair summary logs
- Hot Spot Removal Documentation (see Appendix L), which includes:
  - Excavation survey data
  - Trench box excavation acceptance forms
- Representative Progress Photographs (see Appendix H)
- Off-Site Waste Disposal Documentation (see Appendix E)

See Appendices F and G for copies of the weekly progress meeting minutes and monthly progress reports, respectively, which were submitted to USEPA on a regular basis.



## **6.0 PRE-FINAL AND FINAL INSPECTIONS**

### **6.1 Pre-Final Inspection**

On July 13, 2011, a Pre-Final Inspection of the OU-2 Remedy was conducted, including representatives from USEPA, USACE, the Borough of Carlstadt, Golder, and ENTACT.

Overall, this Pre-Final Inspection involved a walk over of the entire Site to determine the completeness of the OU-2 Remedy construction activities. Subsequently, Golder generated and issued a list of “punch list” items for the OU-2 Remedy, which were subsequently rectified by ENTACT.

See Appendix M for a copy of the Pre-Final Inspection memorandum, dated July 15, 2011, which includes all “punch list” items identified during the Pre-Final Inspection of the OU-2 Remedy.

### **6.2 Final Inspection**

On July 21, 2011, a Final Inspection of the OU-2 Remedy was conducted by representatives from USEPA, USACE, Golder, and ENTACT.

Overall, this Final Inspection involved a walk over of the entire Site to determine: a) the completeness of the OU-2 Remedy construction activities; and b) the extent that the Pre-Final Inspection identified “punch list” items were addressed.

At the time of the Final Inspection, ENTACT had addressed and completed thirty (30) of thirty-six (36) Pre-Final Inspection “punch list” items, and USEPA identified five (5) new, additional “punch list” items, which were subsequently addressed by ENTACT on the same day as the Final Inspection. See Appendix N for a copy of the Final Inspection memorandum, dated July 22, 2011.

By July 22, 2011, the only remaining “punch list” items related to the seeding of the new cover system, which were completed on September 28, 2011.

On July 29, 2011, USEPA provided acknowledgement of their satisfaction with the Final Inspection of the OU-2 Remedy, provided the remaining “punch list” items (i.e., seeding activities) are satisfactorily completed. See Appendix O for USEPA’s acknowledgement, dated July 29, 2011, that the Final Inspection was completed to their satisfaction.



## 7.0 CERTIFICATION

Overall, it is Golder's opinion that the OU-2 Remedy was completed in compliance with the ROD, Consent Decree, and FDR requirements.

In addition, Pre-Final and Final Inspections of the completed OU-2 Remedy were conducted, and these inspections were deemed satisfactory to USEPA (i.e., USEPA did not identify the need for any additional corrective actions).

Pursuant to Section XIV, Article 48 of the Consent Decree for the OU-2 Remedy:

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my thorough inquiry of the person or persons who manage the system or those directly responsible for gathering the information, I certify that, to the best of my knowledge and belief, the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Certified by: P. Stephen Finn, C. Eng.  
Project Coordinator

Date: September 29, 2011



## 8.0 OPERATIONS AND MAINTENANCE

As part of the OU-2 Remedy, an Operations and Maintenance (O&M) Plan was prepared to describe and define the long-term inspection, maintenance, repair, sampling, and monitoring activities to be performed at the Site, upon completion of the OU-2 Remedy.

The O&M Plan for the OU-2 Remedy supersedes and replaces, in its entirety, the O&M Plan for the OU-1 Interim Remedy, dated July 19, 1991, and subsequent revisions to the OU-1 Interim Remedy O&M Plan.

In summary, the O&M Plan for the OU-2 Remedy is organized to provide inspection and maintenance activities in connection with the following remedial components:

- Access roads, sheet pile wall, and fence systems
- Cover and surface water management systems
- Groundwater recovery system
- Groundwater sampling, analyses, and monitoring

During the O&M period, the Group will report to USEPA on the O&M activities performed through means of quarterly O&M reports, as required by Section 7.0 of the O&M Plan. In addition, USEPA will be notified of any: a) needs for non-routine maintenance activities; b) potential operating problems, and proposed remedies; and c) needs to modify the O&M Plan.



## 9.0 SUMMARY OF CONSTRUCTION COSTS

Per the ROD, the capital (i.e., remedial construction) cost for Alternative SC-3, which included the Hot Spot removal, was estimated at \$13.9 million, based on the FFS for the OU-2 Remedy, dated April 2001.

To date, the total remedial construction costs in connection with the OU-2 Remedy, including the Hot Spot removal, are projected to be on about \$12.0 million.





## 10.0 OBSERVATIONS AND LESSONS LEARNED

In summary, selected observations and lessons learned during the implementation of the OU-2 Remedy include the following:

- **Communications:** Establishment and maintenance of direct, open lines of communications, between various parties (i.e., USEPA, USACE, Borough of Carlstadt, Golder, and RACs), proved to be beneficial to the overall project. In particular, engagement of the Borough of Carlstadt administration and emergency personnel (i.e., police, fire, and EMS) at the construction “kick off” meetings kept the Borough informed of the scope and schedule of remedial construction activities on-Site.
- **Health and Safety:** The establishment of a proactive health and safety culture among the on-Site personnel (e.g., laborers, equipment operators, and Golder/RAC field teams) was integral to the successful implementation of the OU-2 Remedy. In total, the RACs (i.e., ENTACT and WRScompass) worked a combined total of about 45,200 labor-hours on-Site without a reportable, recordable accident, injury, or incident.
- **Radio Frequency (RF) Electrostimulation:** As part of the OU-2 Remedy, it was necessary to utilize cranes on-Site. While operating these cranes, an unforeseen safety condition occurred when the crane equipment became energized, as a result of its proximity to nearby radio transmission towers (i.e., located about 1,000 and 1,500 feet northwest and southeast of the Site). This RF electrostimulation condition did not result in any OSHA reportable, recordable injuries, but did cause some construction delays, while additional Site controls (i.e., grounding of equipment and use of non-conductive PPE) were being implemented.
- **Progress Meetings:** Weekly progress meetings were convened on-Site, which were regularly attended by representatives of USEPA, USACE, Golder, and the RACs. In addition, representatives from the Borough of Carlstadt occasionally attended these progress meetings. Overall, these progress meetings provided an environment whereby an open flow of information allowed for issues to be addressed and decisions to be made in a timely manner.
- **In-situ Treatment of Hot Spot:** The selected remedy included a combination of in-situ treatment technologies (i.e., ISAS and ISS). Furthermore, the FDR and Contract Documents required that a pilot-scale FVP be performed, prior to start of full-scale treatment activities, to demonstrate that the ROD-stipulated performance criteria could be achieved. However, upon completion of the FVP, it was apparent that the specified ISAS could not achieve the Total VOC performance criteria (i.e., concentrations less than 1,280 ppm) within a reasonable period of time. After upwards of 16 hours of ISAS mixing, total VOC levels remained about 2.5 to 3 times higher than the designated performance criteria. Modifications to the specified in-situ treatment process were attempted, including the introduction of pelletized lime into the mixing process to increase in-situ temperatures and the volatilization of contaminants from the Hot Spot materials. However, it was found that the rate of lime addition was difficult to control in the field, and excess heat was generated leading to a potentially unsafe situation. The Group, therefore, discontinued in-situ treatment activities on-Site. Per the ROD, discontinuation of in-situ treatment activities triggered the removal (i.e., excavation and off-Site disposal) of the delineated Hot Spot, which required remedial construction activities on-Site to shutdown for a period of about fifteen (15) months to solicit, procure, and negotiate a separate construction contract for the Hot Spot Excavation Project.
- **Trench Box Excavation Method:** Required Hot Spot removal activities presented with significant design and construction challenges, such as: a) the proximity of the delineated sludge Hot Spot to the perimeter slurry wall; and b) air quality conditions within the



planned excavation. Open, braced excavation support systems were considered, but require workers to physically enter the excavations in Level B PPE, which presented substantial H&S hazards. To mitigate these H&S hazards and eliminate the need for workers to enter the excavation, WRScompass proposed utilizing a combination of structurally engineered trench boxes and steel plating to excavate the Hot Spot in stage within an ACS. Furthermore, the sequence and configuration of the trench boxes allowed excavation activities to proceed expeditiously, while protecting the adjacent slurry wall.

- **Stabilization of Excavated Sludge Materials:** Prior to excavation of the delineated Hot Spot, eleven (11) additional geoprobe soundings were advanced to further delineate and characterize the sludge materials. In addition, a representative bulk sludge sample was collected for testing. Paint filter test performed on the sludge materials passed, but on inspection of the bulk sample, it was obvious substantial amounts of free water would be released from the sludge matrix, upon excavation and loading into IMCs. Therefore, WRScompass and Clean Harbors developed a sludge stabilization procedure, which involved the introduction and mixing of sawdust into the sludge materials contained within each trench box excavation. Ultimately, the addition of sawdust increased the disposal quantity (i.e., tonnage), but it was effective in retarding the release of free liquids within the IMCs on transport from the Site to the disposal facility.
- **Replacement of Air Compressor:** In 2008, ENTACT installed a single 1.5-hp reciprocating-piston air compressor within the new maintenance building, which was intended to operate the pneumatic groundwater extraction pumps installed on-Site (see Figure 7). On May 18, 2009, the new groundwater recovery system was brought online. However, it was not anticipated that this 1.5-hp compressor would operate nearly continuously, and in the fall of 2010, it was apparent this air compressor was approaching or at the end of its duty (i.e., life) cycle, and required replacement, prior to completion of the OU-2 Remedy construction. In July 2011, the original 1.5-hp reciprocating-piston air compressor was replaced with a new 5-hp rotary-screw air compressor (i.e., Ingersoll Rand Model UP6-5TAS).
- **On-Site Consolidation of Excavated Materials:** There was a need to excavate additional on-Site historic fill materials from/between: a) the new and pre-existing sheet pile wall; and b) the installed geomembrane and property line along Paterson Plank Road. Furthermore, these excavation activities were coordinated to allow said materials to be consolidated beneath the new cover system, which eliminated the need for additional off-Site disposal. In addition, IDW materials, produced in connection with the project but not as part of the OU-2 Remedy, were consolidated beneath the new cover system.
- **Reuse of Building Foundations:** The new maintenance building was designed to reuse the pre-existing 1-story building foundations, which mitigated the need for additional subgrade demolition and off-Site disposal.
- **Site Access and Constraints:** The OU-2 Remedy required that remedial construction activities be performed on nearly the entire Site, and access to the Site was limited to one (1) location along Paterson Plank Road. Therefore, ENTACT had to construct the new cover system utilizing a segmental, sequential approach. In addition, planned remedial construction activities on-Site left practically no room for the establishment of temporary field construction offices. To overcome these challenges, ENTACT was able to obtain permission to occupy small portions of the adjacent ABF Trucking property for the establishment of temporary construction offices and staging purposes.



## 11.0 CONTACT INFORMATION

See below for contact information for selected “key” project parties in connection with the OU-2 Remedy.

Contact	Role / Title	Address	Phone Number	E-mail Address
Stephanie Vaughn	RPM	USEPA, Region 2 290 Broadway, 19 <sup>th</sup> Floor New York, NY 10007	(212) 637-3914	<a href="mailto:vaughn.stephanie@epamail.epa.gov">vaughn.stephanie@epamail.epa.gov</a>
Kristin Giacalone	RPM	USEPA, Region 2 290 Broadway, 19 <sup>th</sup> Floor New York, NY 10007	(212) 637-4407	<a href="mailto:giacalone.kristin@epamail.epa.gov">giacalone.kristin@epamail.epa.gov</a>
Riché Outlaw	Case Manager	NJDEP Bureau of Case Management 401 East State Street, 6 <sup>th</sup> Floor P.O. Box 028 Trenton, NJ 08652	(609) 633-1455	<a href="mailto:riche.outlaw@dep.state.nj.us">riche.outlaw@dep.state.nj.us</a>
Gwen Zervas	Case Manager	NJDEP Bureau of Case Management 401 East State Street, CN028 Trenton, NJ 08652	(609) 633-1455	<a href="mailto:gwen.zervas@dep.state.nj.us">gwen.zervas@dep.state.nj.us</a>
Jane Fontana	Borough Administrator	Borough of Carlstadt Memorial Municipal Building 500 Madison Street Carlstadt, NJ 07072	(201) 531-7199	<a href="mailto:busadmin@carlstadtnj.us">busadmin@carlstadtnj.us</a>
Steve Finn	Group Representative	Golder Associates Inc. 200 Century Parkway, Suite C Mt. Laurel, NJ 08054	(856) 793-2005	<a href="mailto:steve_finn@golder.com">steve_finn@golder.com</a>
Mark McNeilly	Remedial Designer	Golder Associates Inc. 744 Broad Street 25 <sup>th</sup> Floor, suite 2500 Newark, NJ 07102	(973) 645-1922	<a href="mailto:mark_mcneilly@golder.com">mark_mcneilly@golder.com</a>
David Walsh	Construction Manager	Golder Associates Inc. 200 Century Parkway, Suite C Mt. Laurel, NJ 08054	(856) 793-2005	<a href="mailto:david_walsh@golder.com">david_walsh@golder.com</a>
Greg Tunstall	President	ENTACT, LLC 699 S. Friendswood Drive Suite 101 Friendswood, TX 77546	(281) 966-9892	<a href="mailto:gtunstall@entact.com">gtunstall@entact.com</a>
Kevin Corradino	Vice President	WRScompass Hamilton Business Center One South Gold Drive Hamilton, NJ 08691	(609) 371-7500	<a href="mailto:kcorradino@wrscompass.com">kcorradino@wrscompass.com</a>



## 12.0 REFERENCES

- United States Environmental Protection Agency (1985a), *Administrative Order on Consent Index No. II CERCLA-50114, September 30, 1985*
- United States Environmental Protection Agency (1985b), *Administrative Order Index No. II CERCLA-60102, October 23, 1985*
- Dames and Moore (1989), *Test Pit Investigation SCP/Carlstadt July 1989*, August 4, 1989
- Dames and Moore (1990), *Final Report - Remedial Investigation SCP Site, Carlstadt, New Jersey*, March 1, 1990
- Clement Associates, Inc. (1990), *Final Draft Baseline Risk Assessment for the Scientific Chemical Processing (SCP), Inc. Site*, March 1990
- United States Environmental Protection Agency (1990a), *Record of Decision – Scientific Chemical Processing Site Operable Unit No. 1*, September 14, 1990
- United States Environmental Protection Agency (1990b), *Administrative Order Index No. II CERCLA-00116, September 28, 1990*
- Canonie Environmental (1991a), *Interim Remedy Remedial Design Report*, July 19, 1991
- Canonie Environmental (1991b), *Operations and Maintenance Plan*, July 19, 1991
- Canonie Environmental (1992), *Final Report – Interim Remedy for First Operable Unit*, September 25, 1992
- Golder Associates Inc. (1996), *Focused Feasibility Study Investigation Work Plan – First operable Unit Fill*, April 1996
- Golder Associates Inc. (1997), *Focused Feasibility Investigation Report*, November 1997
- Golder Associates Inc. (1998a), *Investigation Derived Waste and Sludge Tank Management Documentation Report*, July 1998
- Golder Associates Inc. (1998b), *First Operable Unit, Treatability Study Work Plan*, August 1998
- Kiber Environmental Services, Inc. (2000), *216 Patterson Plank Road Site – Treatability Study – Final Report*, July 2000
- Golder Associates Inc. (2001), *Focused Feasibility Study, Operable Unit 2, Final Remedy: Fill and Shallow Groundwater*, April 2001
- United States Environmental Protection Agency (2002), *Record of Decision – Scientific Chemical Processing Site Operable Unit No. 2*, August 12, 2002
- New Jersey Department of Environmental Protection (2005, 2011), *Field Sampling Procedures Manual*, August 2005, updated April 11, 2011
- Golder Associates Inc. (2005), *Revised Remedial Design Work Plan for Operable Unit 2*, April 2005
- Golder Associates Inc. (2007), *Final Design Report for Operable Unit No. 2*, May 8, 2007



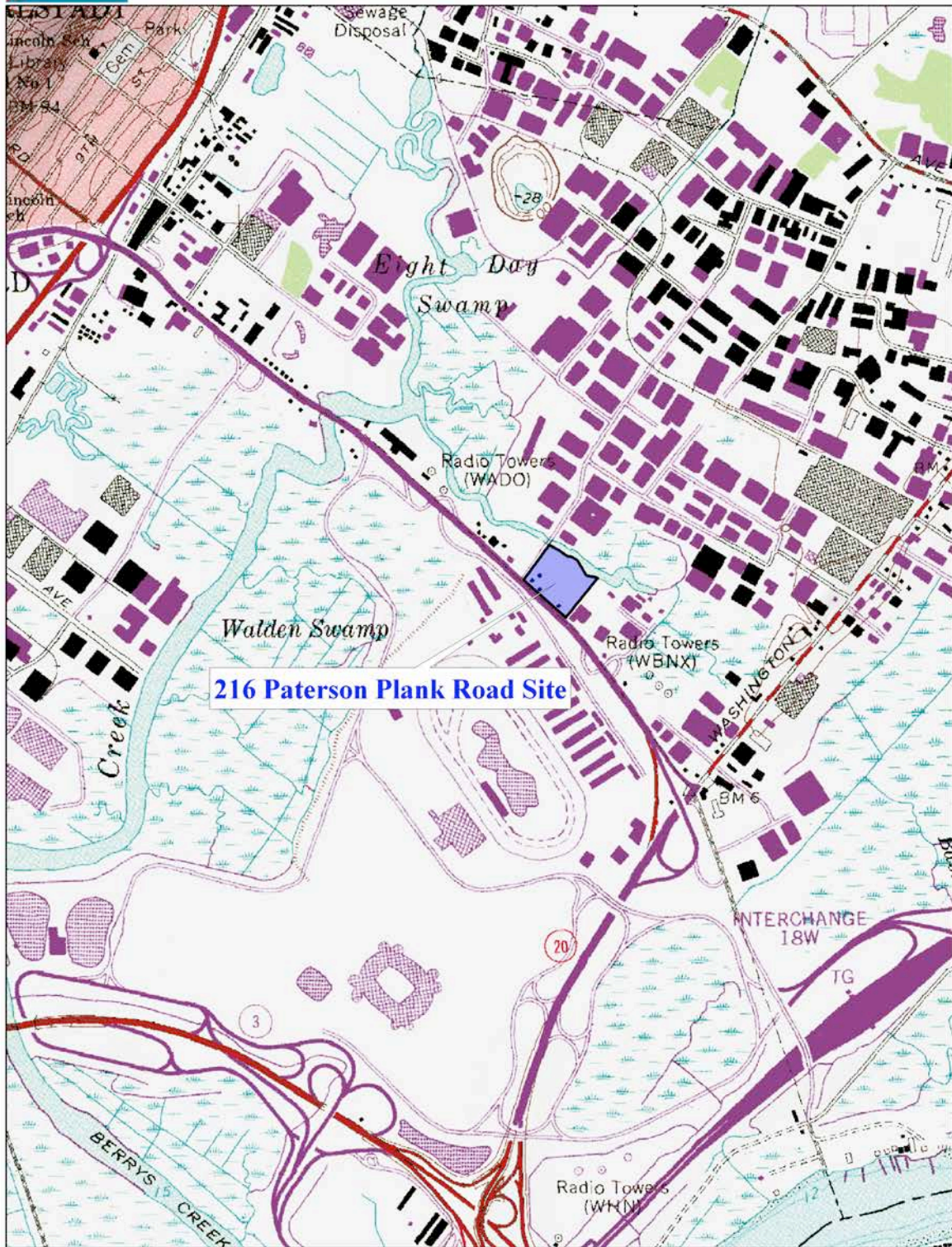
Golder Associates Inc. (2008), *Remedial Action Work Plan, Operable Unit No. 2*, June 27, 2007

Golder Associates Inc. (2010), *Remedial Action Work Plan Addendum, Hot Spot Excavation Project, Operable Unit No. 2*, August 12, 2010

Golder Associates in. (2011), *Draft Operations and Maintenance (O&M) Plan for Operable Unit No. 2*, June 17, 2011

## FIGURES





Data use subject to license.

© 2004 DeLorme. XMap® 4.5.

www.delorme.com



NJ Authorization #24GA28029100

SCALE AS SHOWN

DATE 09/29/11

DESIGN FGM

CADD FGM

CHECK DKL

REVIEW MFM

TITLE

## SITE LOCATION MAP

FILE No.: RAR – Figure 1

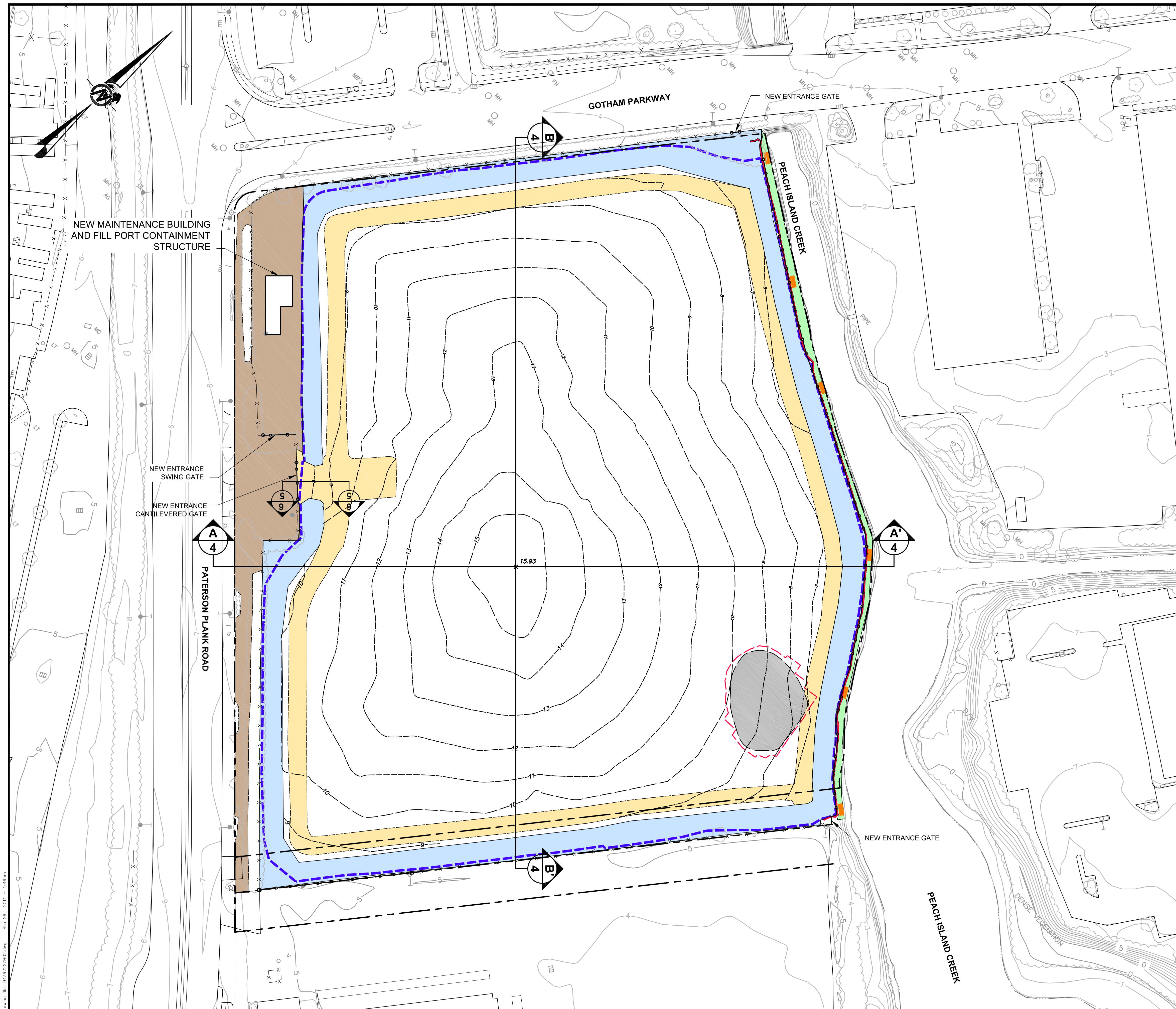
PROJECT No.: 943-6222.001 REV. 0

**216 PATERSON PLANK ROAD SITE**











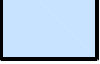



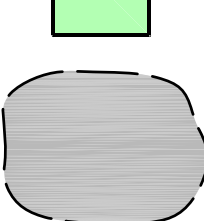

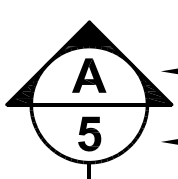
FIGURE

**1**





## LEGEND

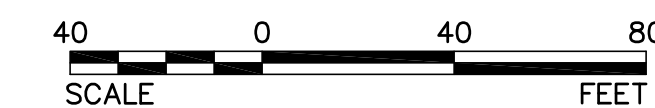
- |   |   |
|---|---|
|   | GROUND CONTOURS   |
|  | EDGE OF STREAM  |
|  | EXISTING FENCE  |
|  | NEW FENCE   |
|  | PROPERTY LINE   |
|  | LIMITS OF HOT SPOT REMOVAL  |
|  | NEW SHEET PILE WALL   |
|  | AS-BUILT GROUND CONTOURS  |
|  | LIMITS OF NEW GEOMEMBRANE   |
|  | DISCHARGE WEIR  |
|  | PERIMETER DRAINAGE CHANNEL, SEE DETAILS $\frac{2}{5}$ AND $\frac{4}{5}$ |
|  | ACCESS ROAD, SEE DETAIL $\frac{5}{5}$                                   |
|  | STONE AGGREGATE COVER, SEE DETAIL $\frac{3}{5}$                         |
|  | RIPRAP PROTECTION   |
|  | LIMITS OF DELINEATED HOT SPOT AREA                                      |
|  | AS-BUILT SPOT ELEVATION   |
|  | DETAIL OR CROSS SECTION DESIGNATION                                     |
|   | FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED                   |

## NOTES

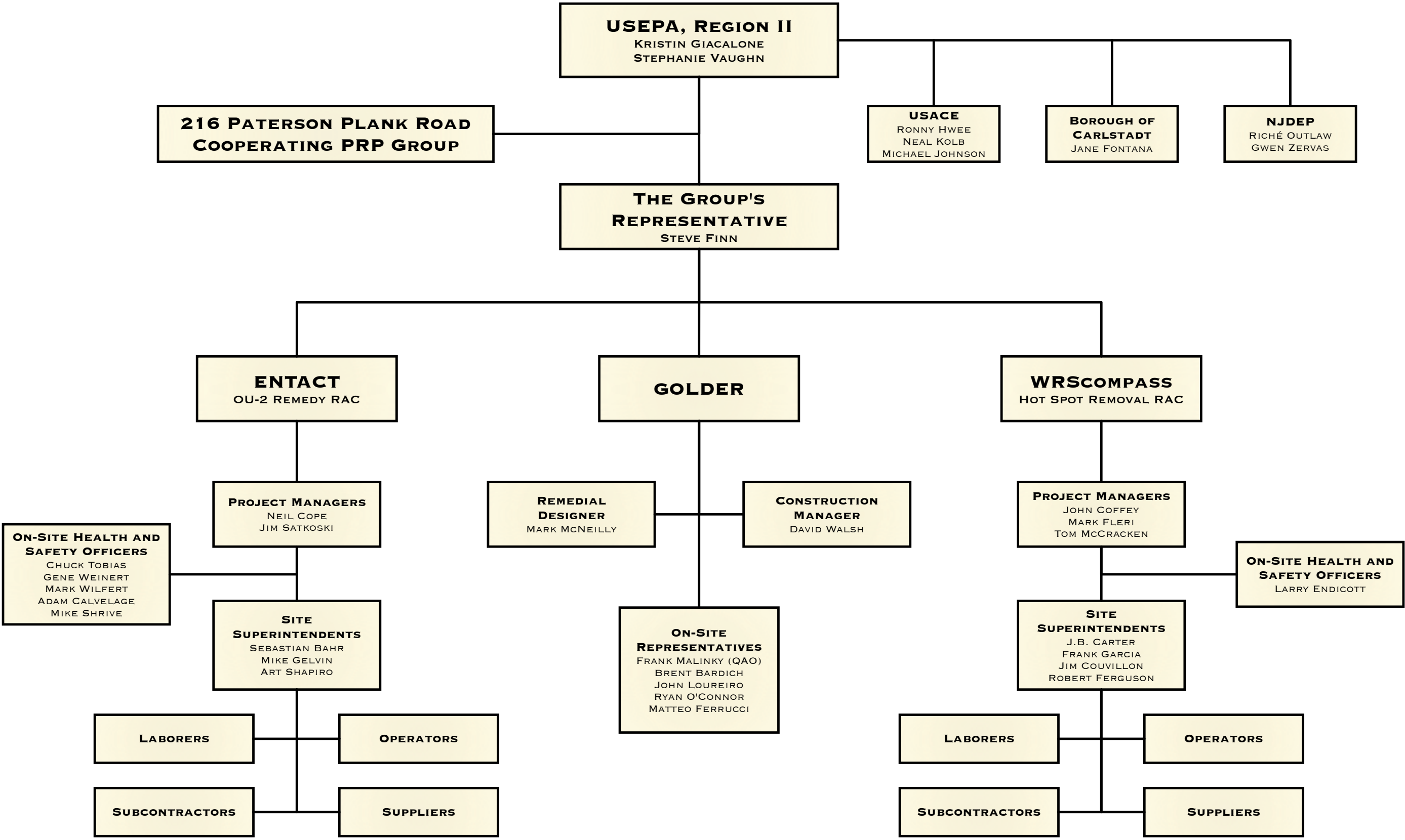
- 1.) ALL LOCATIONS ARE APPROXIMATE.
- 2.) SEE APPENDIX A FOR CONSTRUCTION AS-BUILT DOCUMENTATION.

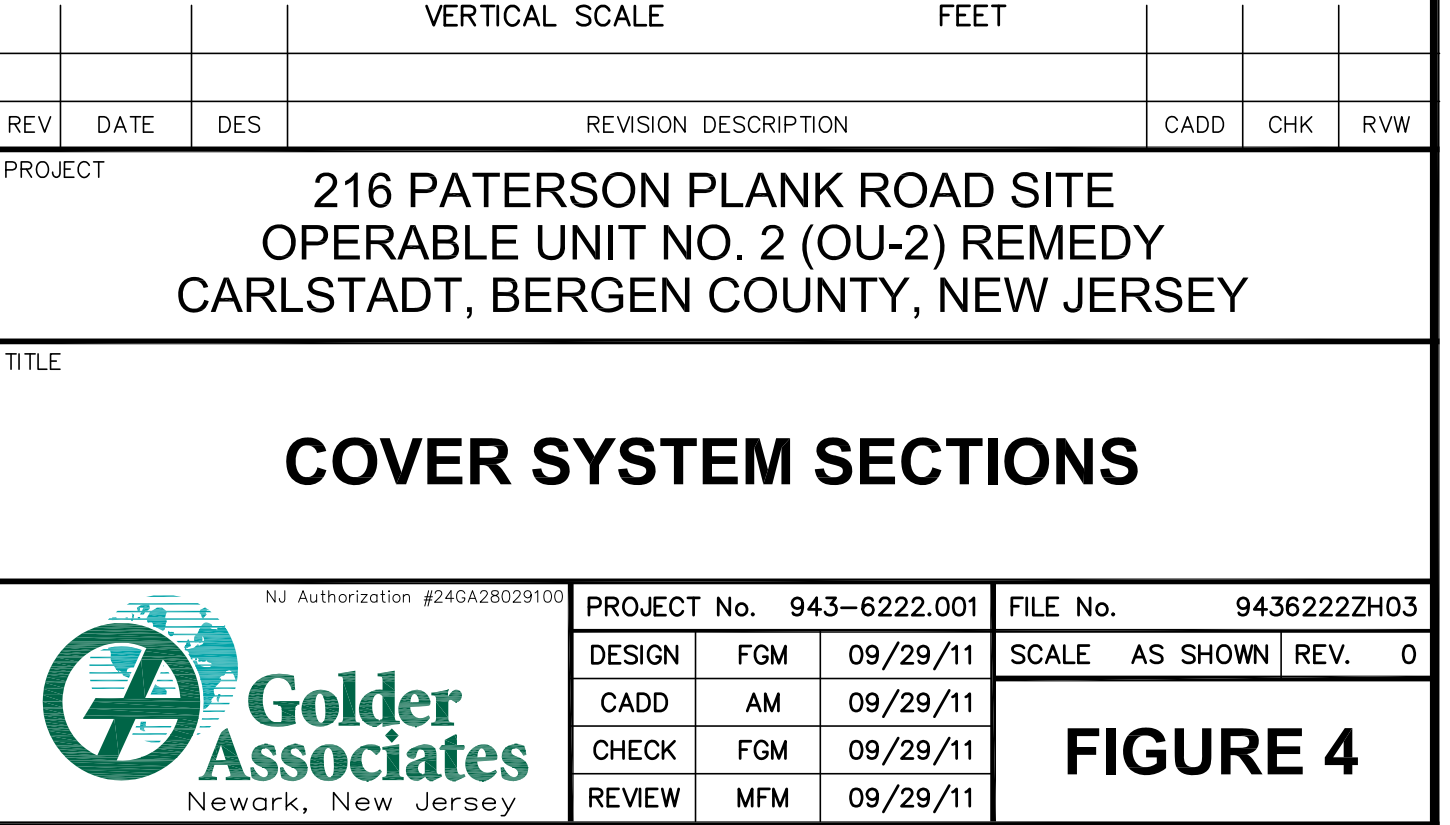
## REFERENCES

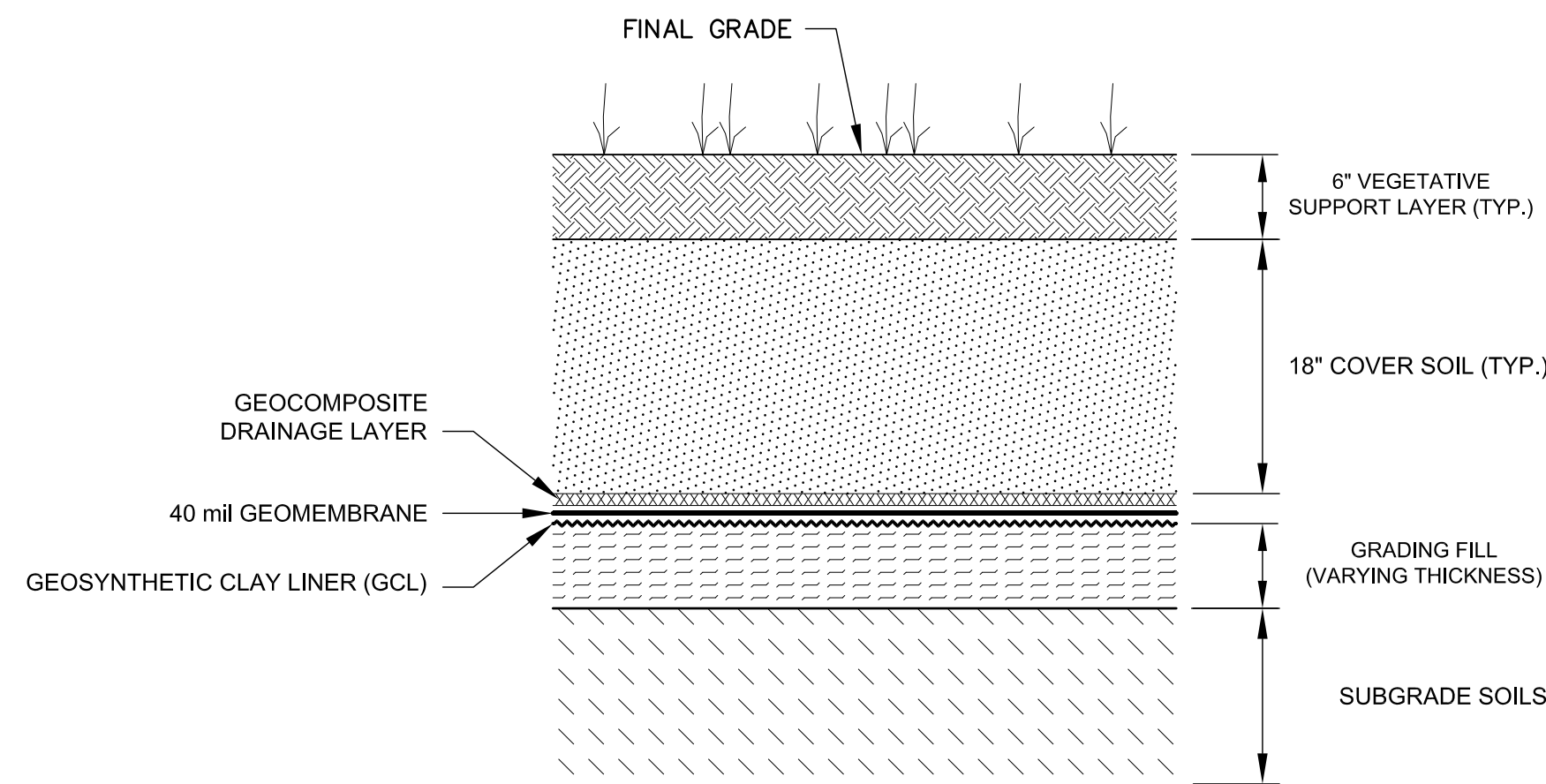
- 1.) TOPOGRAPHIC BASE MAP SHOWN TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG, ENTITLED "BOROUGH OF CARLSTADT BLOCK 124 LOTS 1 THROUGH 5," DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
- 2.) HORIZONTAL DATUM REFERENCES THE NEW JERSEY STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83). VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- 3.) AS-BUILT SHEET PILE LOCATIONS/LIMITS TAKEN FROM DIGITAL CAD FILE RBSU007938.DWG FIGURE 3 OF 7 ENTITLED "AS-BUILT GROUNDWATER RECOVERY SYSTEM AND PIEZOMETER SURVEY," PREPARED BY MASER CONSULTING P.A., DATED AUGUST 16, 2011.
- 4.) NEW FENCE, PERIMETER DRAINAGE CHANNEL, ACCESS ROAD, GEOMEMBRANE AND MAINTENANCE BUILDING LOCATIONS/LIMITS TAKEN FROM DIGITAL CAD FILE RBSU008761.DWG, FIGURE 7 OF 7, ENTITLED "AS-BUILT FINAL SITE CONDITION SURVEY," PREPARED BY MASER CONSULTING P.A., DATED AUGUST 12, 2011.
- 5.) LIMITS OF DELINEATED HOT SPOT AREA TAKEN FROM THE FOCUSED FEASIBILITY STUDY INVESTIGATION REPORT (GOLDER, 1997).
- 6.) LIMITS OF AS-EXCAVATED HOT SPOT EXCAVATION, TAKEN FROM DIGITAL CAD FILE MASU000487.DWG, ENTITLED "PROJECT RECORD AS-BUILT POST-EXCAVATION SURVEY," PREPARED BY MASER CONSULTING P.A., DATED NOVEMBER 18, 2010 (REVISED MARCH 21, 2011).
- 7.) STONE AGGREGATE COVER LOCATIONS/LIMITS TAKEN FROM DIGITAL CAD FILE MASU000518.DWG, ENTITLED "FINAL GRADE AS-BUILT SURVEY," PREPARED BY MASER CONSULTING P.A., DATED DECEMBER 29, 2010.

[illegible]

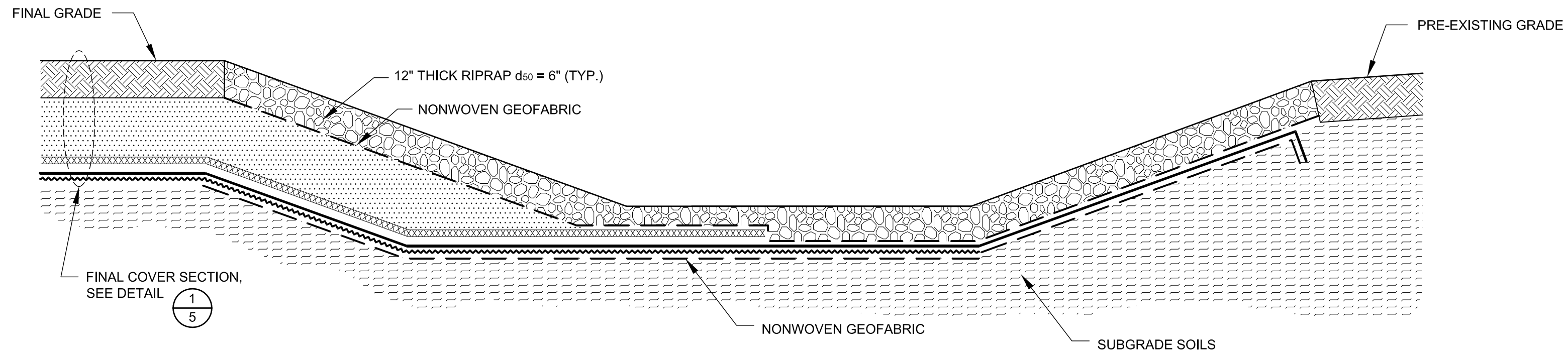




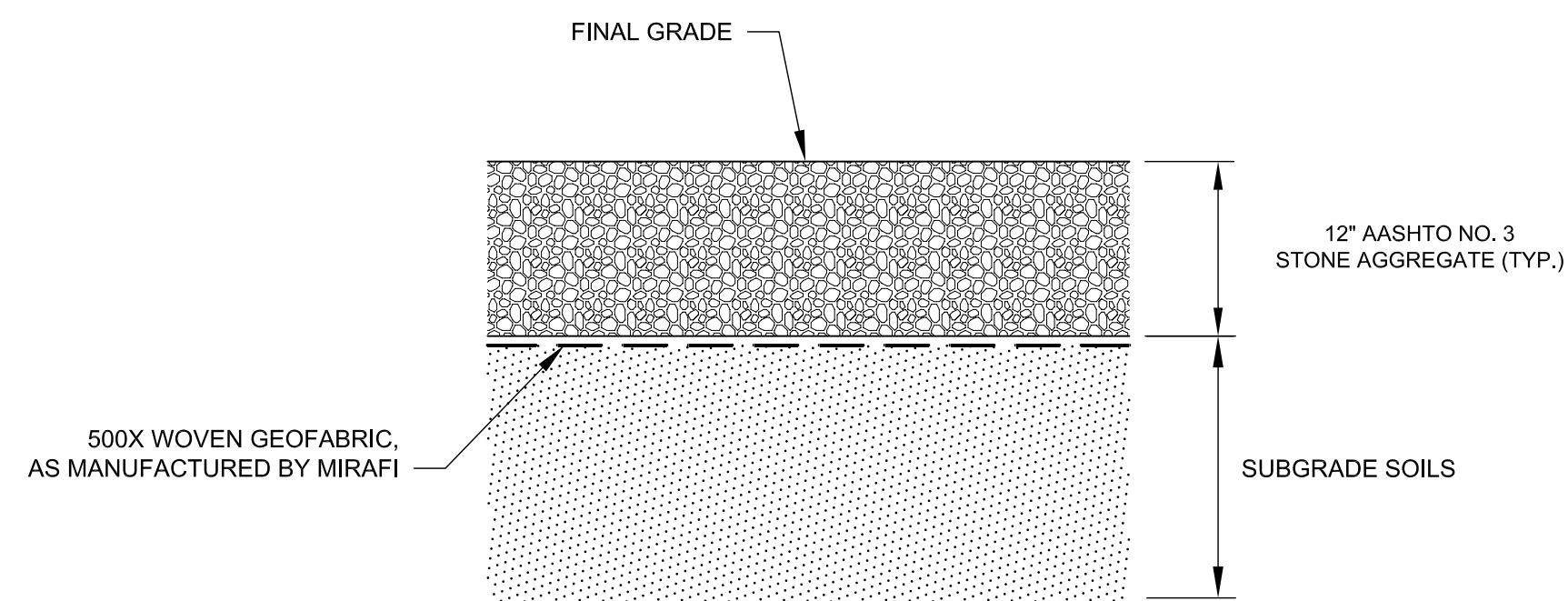




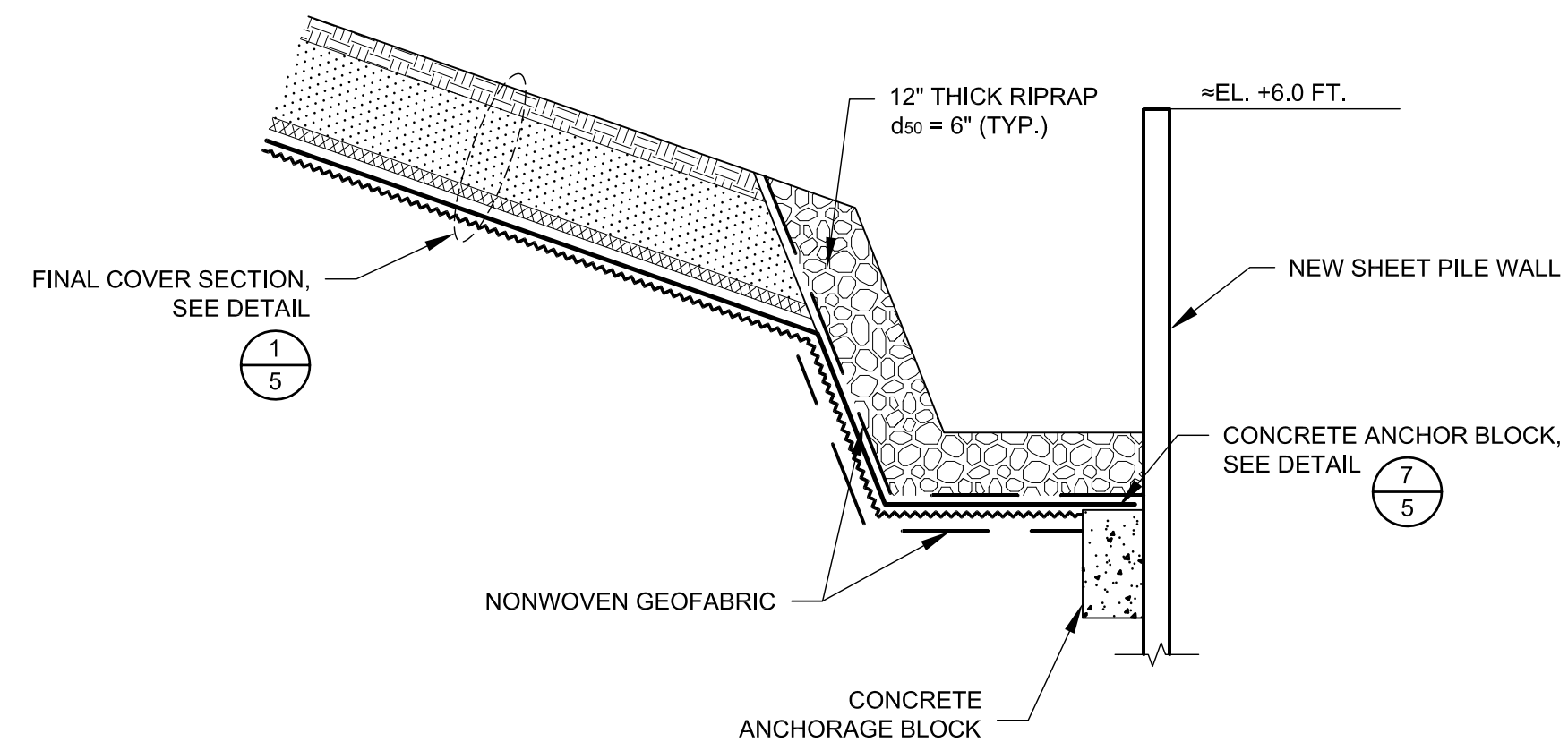
**1**  
**5** **TYPICAL VEGETATED COVER SECTION**  
NOT TO SCALE



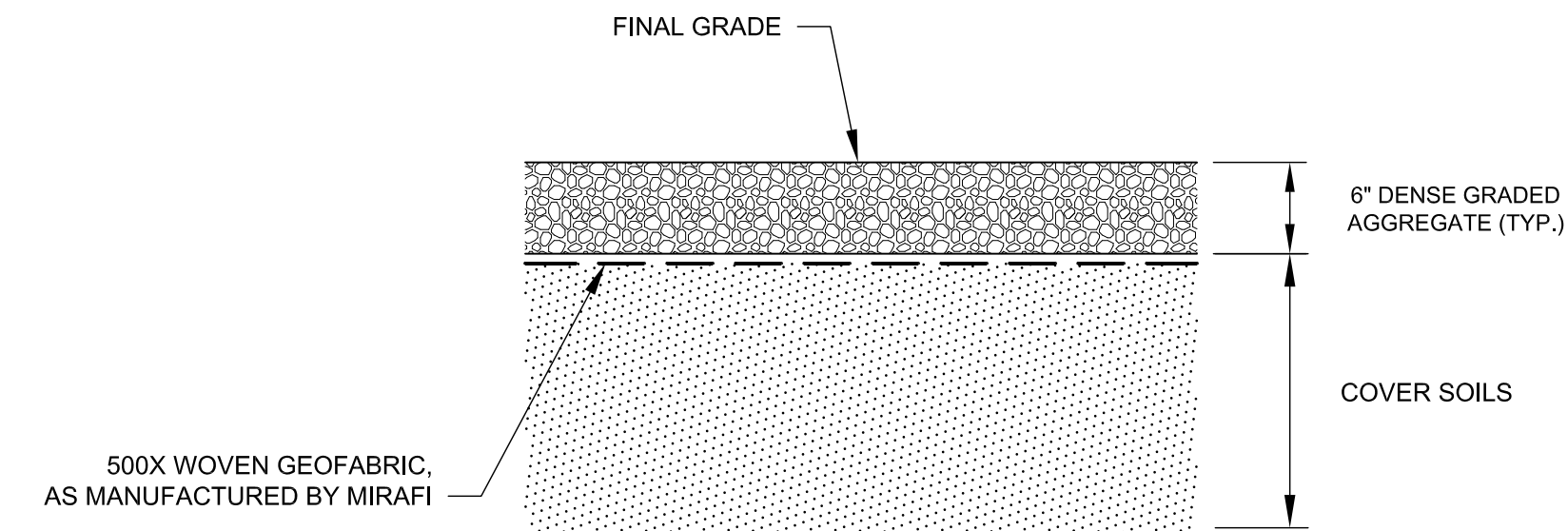
**2**  
**5** **TYPICAL DRAINAGE CHANNEL DETAIL**  
NOT TO SCALE



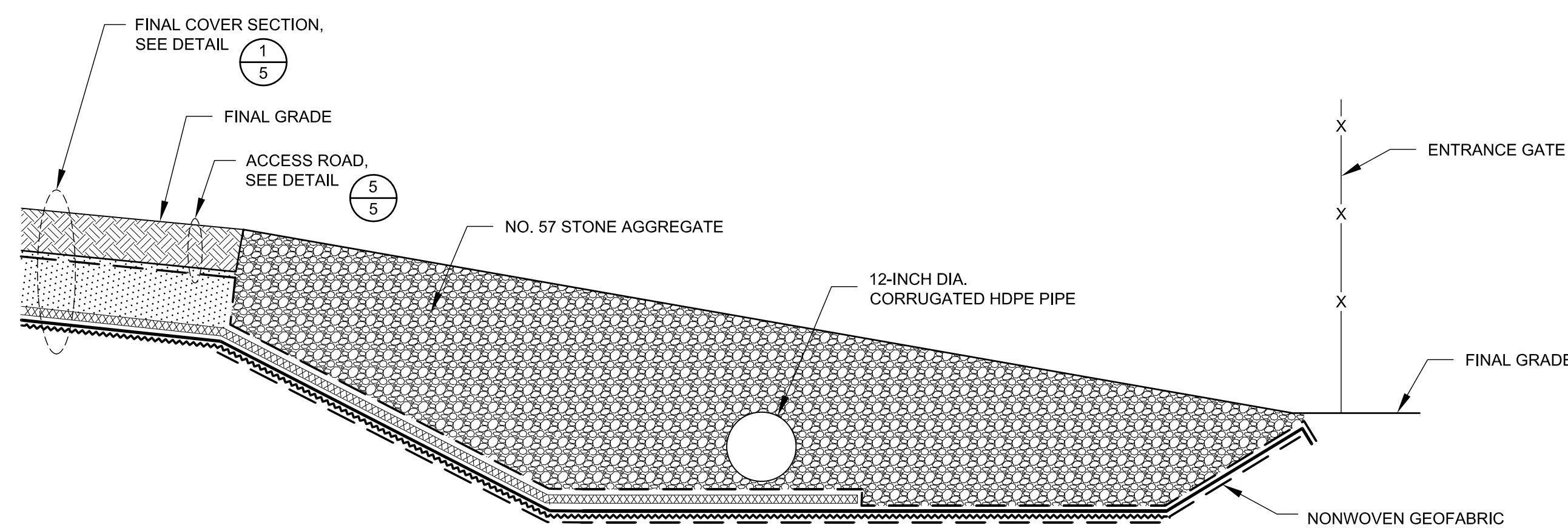
**3**  
**5** **TYPICAL STONE AGGREGATE COVER SECTION**  
NOT TO SCALE



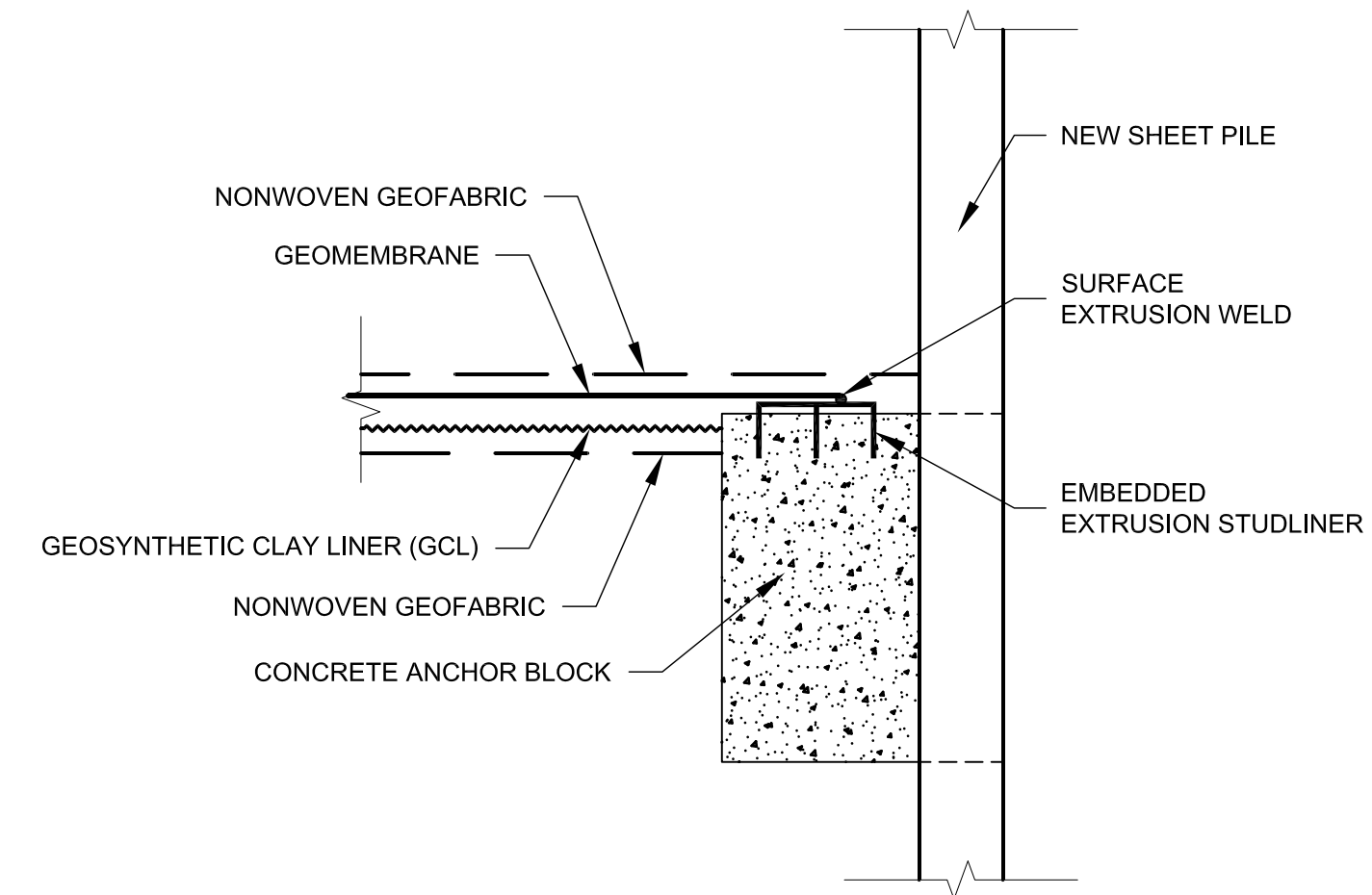
**4**  
**5** **TYPICAL DETAIL ALONG NEW SHEET PILE WALL**  
NOT TO SCALE



**5**  
**5** **TYPICAL ACCESS ROAD SECTION**  
NOT TO SCALE



**6**  
**5** **TYPICAL ENTRANCE ROADWAY DETAIL**  
NOT TO SCALE



**7**  
**5** **CONCRETE ANCHORAGE BLOCK DETAIL**  
NOT TO SCALE

**NOTES**  
1.) GEOSYNTHETIC THICKNESSES ARE EXAGGERATED FOR CLARITY PURPOSES.  
2.) SEE APPENDIX A FOR CONSTRUCTION AS-BUILT DOCUMENTATION.

**REFERENCE**  
1.) VERTICAL DATUM REFERENCES THE NORTH AMERICAN DATUM OF 1988 (NAVD 1988).

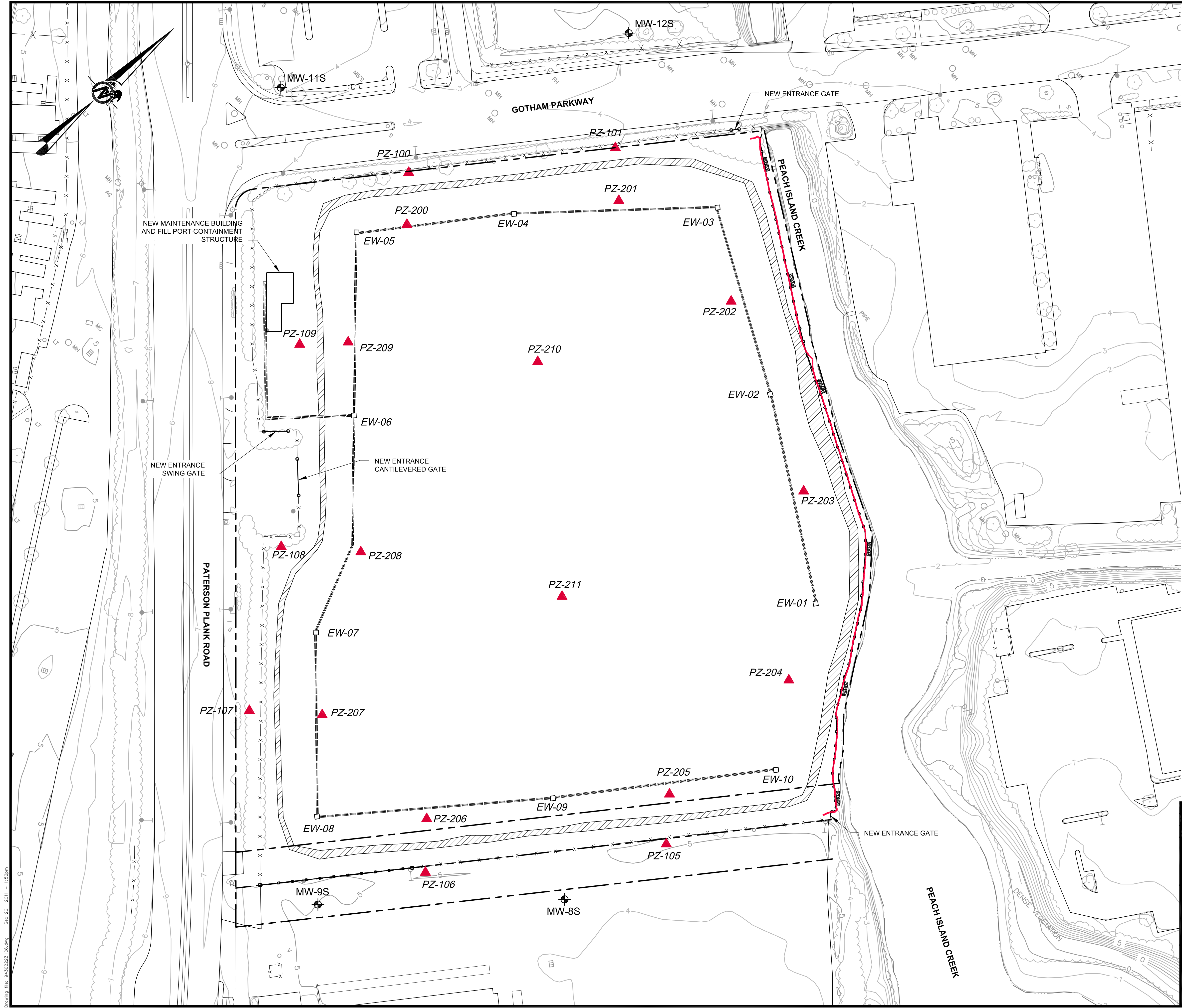
REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
PROJECT						
216 PATERSON PLANK ROAD SITE OPERABLE UNIT NO. 2 (OU-2) REMEDY CARLSTADT, BERGEN COUNTY, NEW JERSEY						
TITLE						
COVER SYSTEM DETAILS						
PROJECT No. 943-6222.001			FILE No. 9436222ZH04			
DESIGN	FGM	09/29/11	SCALE	AS SHOWN	REV.	0
CADD	AM	09/29/11	FIGURE 5			
CHECK	FGM	09/29/11				
REVIEW	MFM	09/29/11				











LEGEND

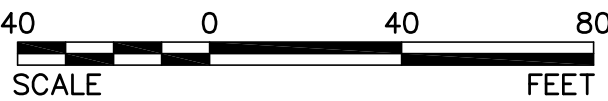
- 5 GROUND CONTOURS (SEE NOTE 2)
- EDGE OF STREAM
- x - x - x - x - EXISTING FENCE
- o - o - o - o - NEW FENCE
- - - - - PROPERTY LINE
- SLURRY WALL
- NEW SHEET PILE WALL
- ▲ PIEZOMETER, SEE DETAIL 1/8
- EXTRACTION WELL, SEE DETAIL 2/8
- ⊕ MONITORING WELL
- - - - - CARRIER PIPES, SEE DETAIL 3/8

NOTES

- 1.) ALL LOCATIONS ARE APPROXIMATE.
- 2.) SEE APPENDIX A FOR CONSTRUCTION AS-BUILT DOCUMENTATION.
- 3.) GROUND SURFACE CONTOURS ARE NOT SHOWN WITHIN THE PROPERTY BOUNDARY FOR ILLUSTRATIVE PURPOSES. SEE FIGURE 2 FOR THE AS-BUILT GROUND SURFACE CONTOURS FOR THE CONSTRUCTED COVER SYSTEM.

REFERENCES

- 1.) TOPOGRAPHIC BASE MAP SHOWN TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG, ENTITLED "BOROUGH OF CARLSTADT BLOCK 124 LOTS 1 THROUGH 5," DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
- 2.) HORIZONTAL DATUM REFERENCES THE NEW JERSEY STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83). VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- 3.) AS-BUILT SHEET PILE, PIEZOMETER, EXTRACTION WELL, AND CARRIER PIPE LOCATIONS/LIMITS TAKEN FROM DIGITAL CAD FILE RBSU007938.DWG, ENTITLED "AS-BUILT GROUNDWATER RECOVERY SYSTEM AND PIEZOMETER SURVEY," PREPARED BY MASER CONSULTING P.A., DATED AUGUST 16, 2011.
- 4.) NEW FENCE AND MAINTENANCE BUILDING LOCATIONS/LIMITS TAKEN FROM DIGITAL CAD FILE RBSU008761.DWG, ENTITLED "AS-BUILT FINAL SITE CONDITION SURVEY," PREPARED BY MASER CONSULTING P.A., DATED AUGUST 12, 2011.




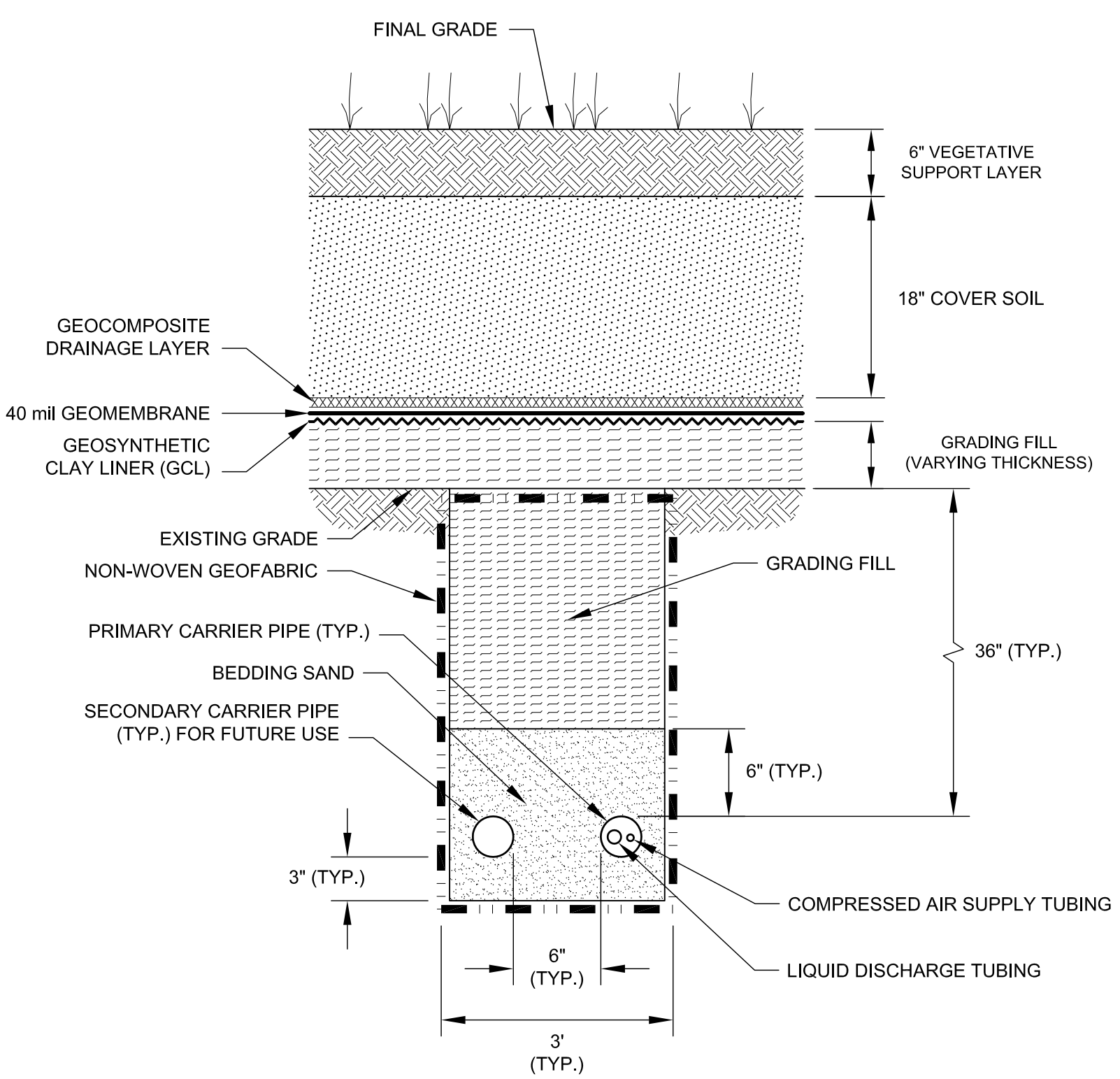
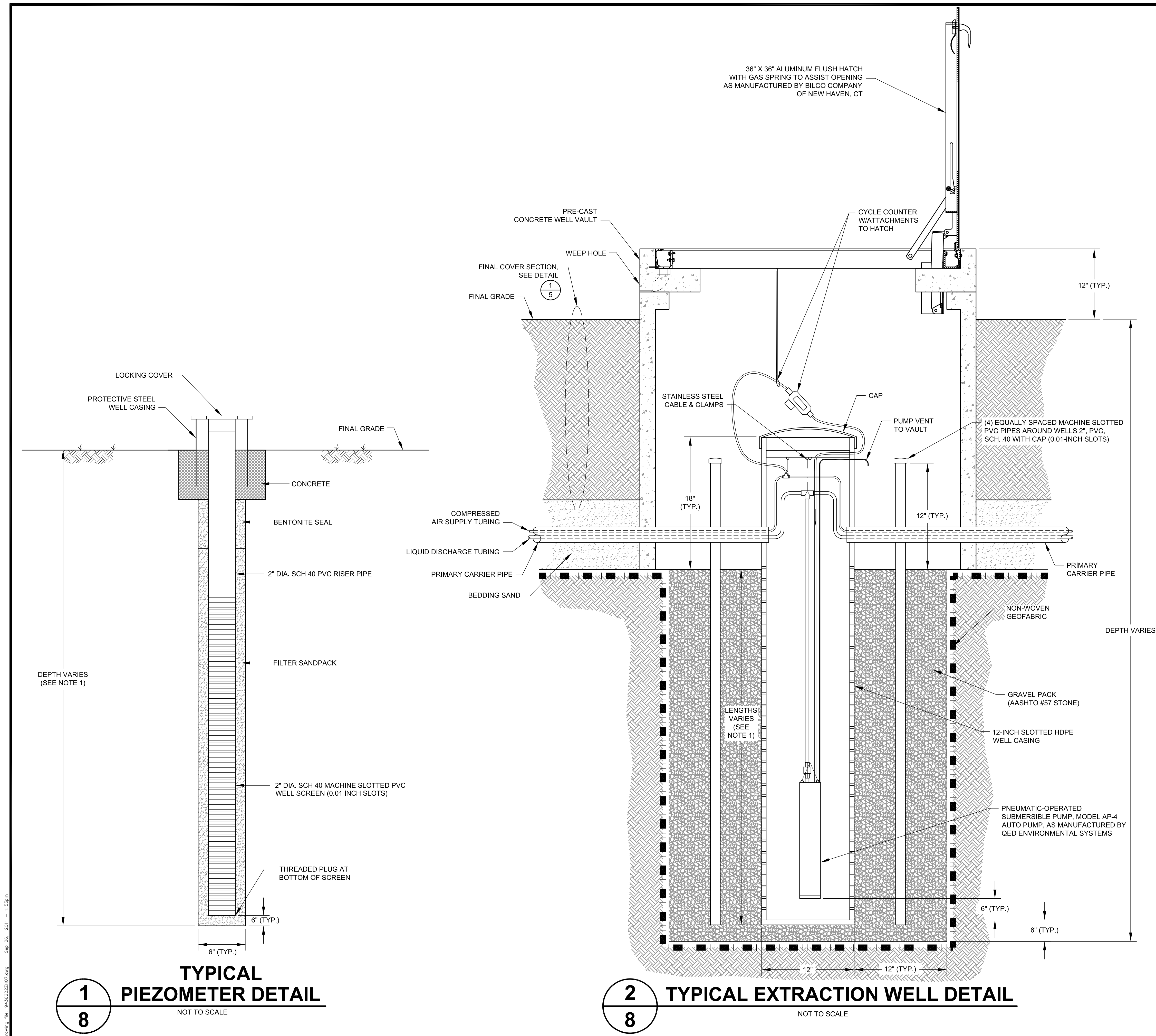
REV	DATE	DES	REVISION DESCRIPTION					CADD	CHK	RVW
PROJECT			216 PATERSON PLANK ROAD SITE OPERABLE UNIT NO. 2 (OU-2) REMEDY CARLSTADT, BERGEN COUNTY, NEW JERSEY							
TITLE			GROUNDWATER RECOVERY SYSTEM PLAN							
 <div>NJ Authorization #240A28029100</div>			PROJECT No. 943-6222.001			FILE No. 9436222ZH06				
			DESIGN	FGM	09/29/11	SCALE	AS SHOWN	REV.	0	
			CADD	AM	09/29/11	FIGURE 7				
			CHECK	FGM	09/29/11					
			REVIEW	MFM	09/29/11					



FIGURE 7





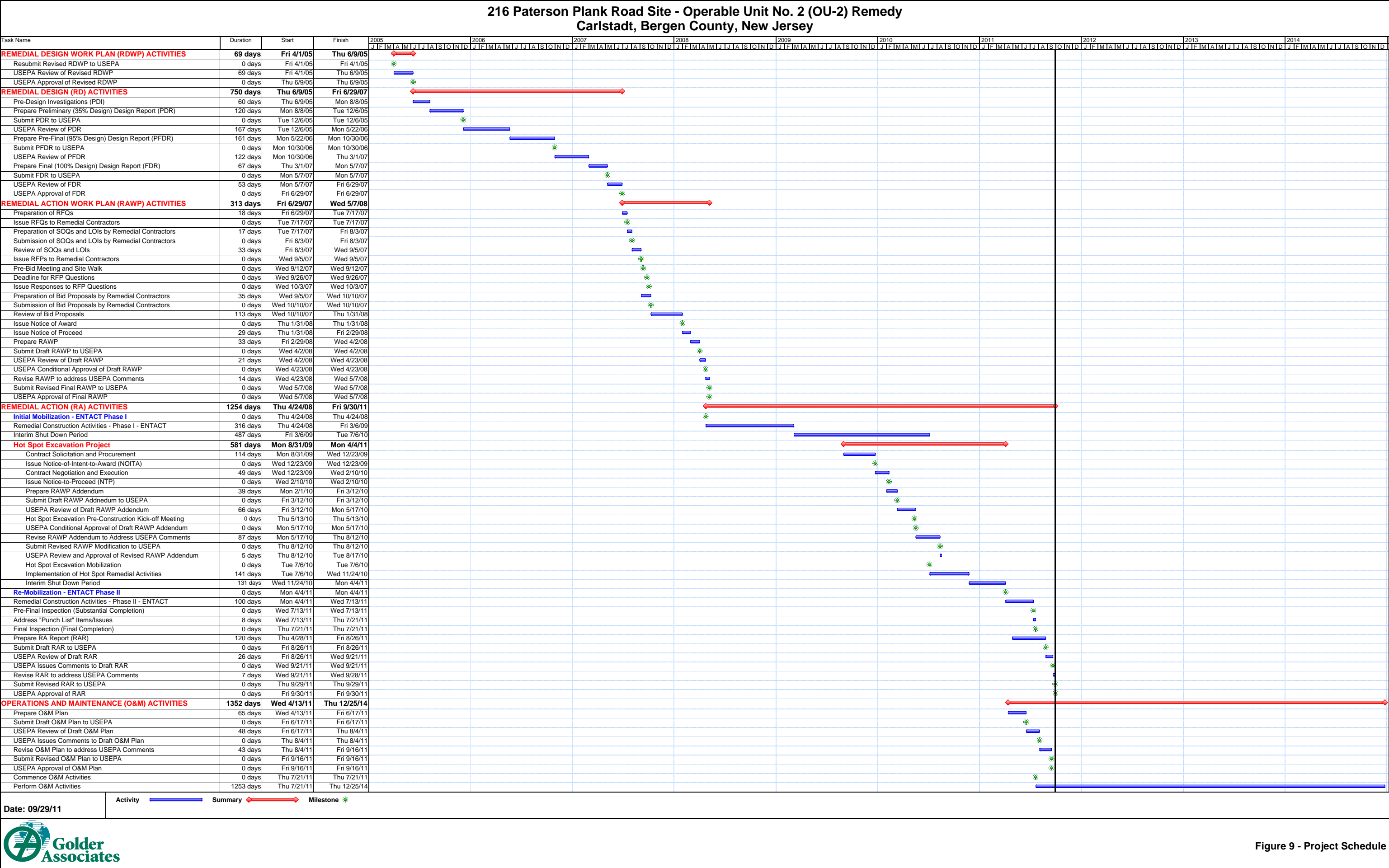
**3**  
**8** **TYPICAL CARRIER PIPE DETAIL**  
NOT TO SCALE

**NOTE**  
1.) SEE APPENDIX J FOR EXTRACTION WELL AND PIEZOMETER LOGS AND RECORDS.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
PROJECT						
216 PATERSON PLANK ROAD SITE OPERABLE UNIT NO. 2 (OU-2) REMEDY CARLSTADT, BERGEN COUNTY, NEW JERSEY						
TITLE						
GROUNDWATER RECOVERY SYSTEM DETAILS						
PROJECT No. 943-6222.001			FILE No. 9436222ZH07			
DESIGN	MFM	09/29/11	SCALE	AS SHOWN	REV.	0
CADD	AM	09/29/11	<b>FIGURE 8</b>			
CHECK	FGM	09/29/11				
REVIEW	MFM	09/29/11				

Drawing file: 9436222ZH07.dwg Sep. 26, 2011 1:53pm

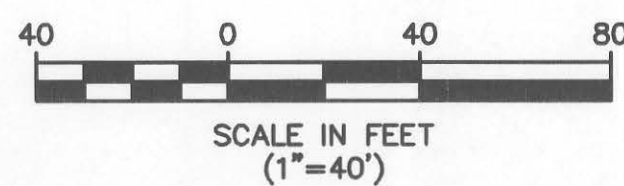








LEGEND		
X	8.92	AS-BUILT PROOF ROLLED ELEVATION
X	7.2	EXISTING SUB-GRADE ELEVATION



*R. Thomas Hugg*  
R. THOMAS HUGG  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737

1. BASE MAP INFORMATION TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG ENTITLED, "BOROUGH OF CARLISLTAD, BLOCK 12A, LOTS 1 THROUGH 5, DATED DECEMBER 8, 2005, PREPARED BY PROMAPS."
2. EXISTING ON SITE TOPOGRAPHY BASED ON A PLAN ENTITLED, "EXISTING TOPOGRAPHIC SURVEY FOR ENTACT ENVIRONMENTAL SERVICES, 216 PATERSON PLANK ROAD, SUITE 100, SITE 1-5, BLOCK 12A, BOROUGH OF CARLISLTAD, BERGEN COUNTY, NEW JERSEY," DATED JUNE 27, 2008, REVISED THROUGH AUGUST 14, 2008 AND PREPARED BY MASER CONSULTING, PA.
3. AS-BUILT ELEVATIONS FOR PROOF ROLLED GRADES OBTAINED BY MASER CONSULTING, PA ON OCTOBER 6, 2008. EXISTING ELEVATIONS IN AREA "F" WERE OBTAINED BY MASER CONSULTING ON 4/23/08. FORMER "HOT ZONE" AREA AS-BUILT ELEVATIONS WERE OBTAINED BY MASER CONSULTING ON 11/3/10.
4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.



**MASER**  
CONSULTING P.A.

Consulting, Municipal & Environmental Engineers  
Planners & Surveyors / Landscape Architects  
State of N.J. Certificate of Authorization: 24GA27986500

**RED BANK OFFICE**  
331 Newman Springs Road  
Suite 203  
Red Bank, N.J. 07701  
Fax (732) 383-1950  
Phone (732) 383-1984  
E-mail - solutions@maserconsulting.com

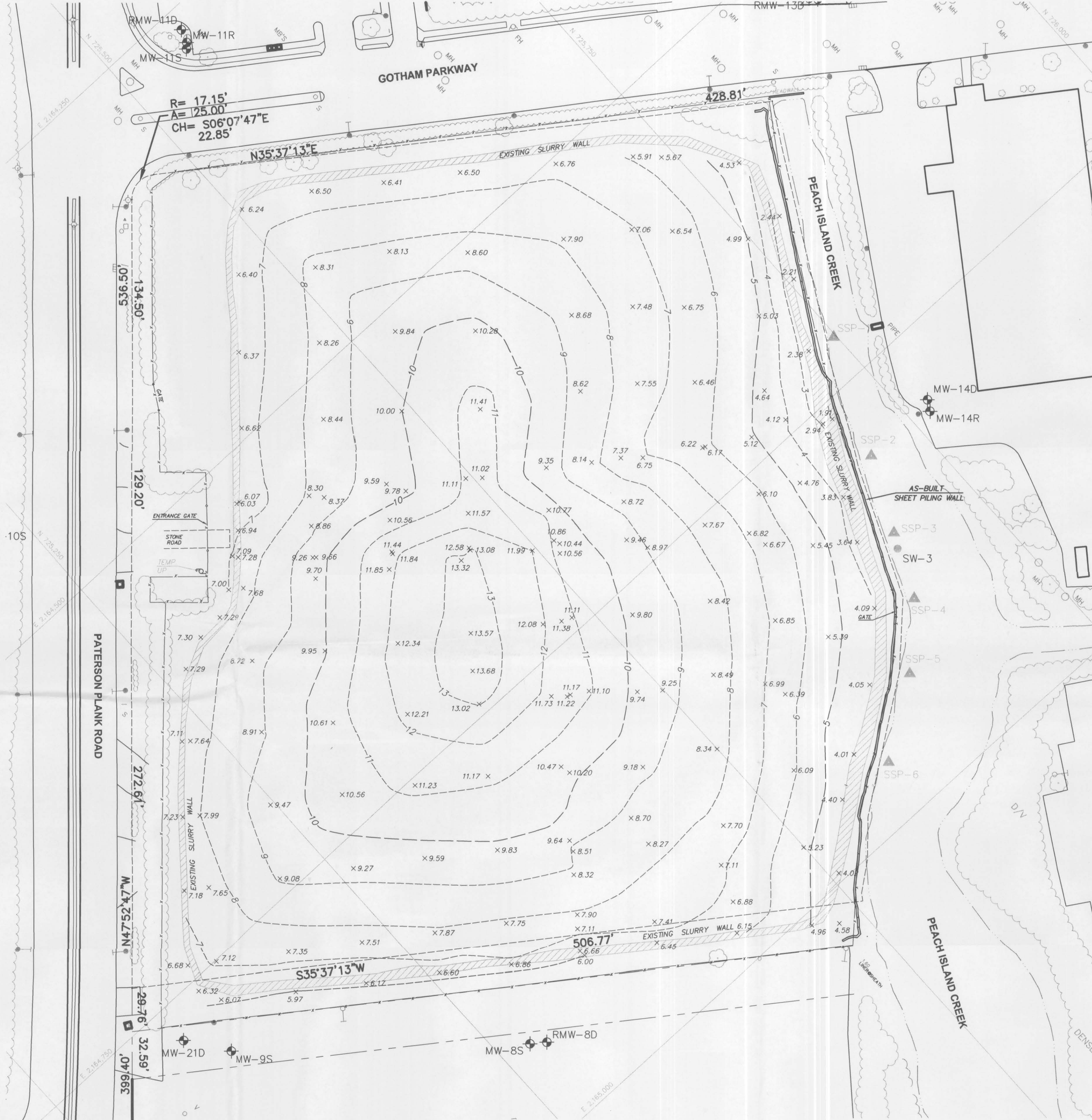
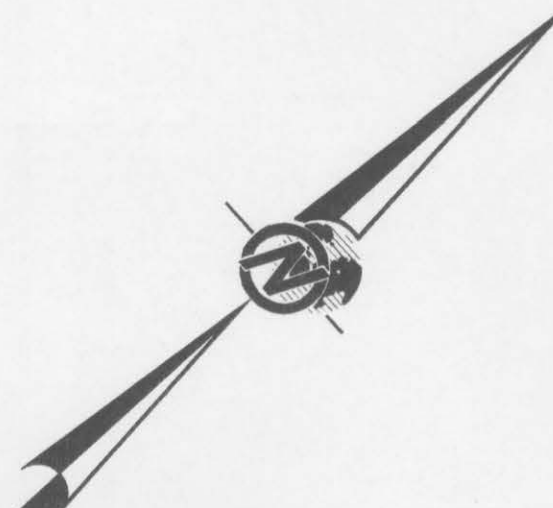
**Regional Offices**  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA

**AS-BUILT PROOF ROLLED SUB-GRADE SURVEY**  
FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATERSON PLANK ROAD SUPERFUND SITE  
OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY  
LOTS 1-5, BLOCK 124  
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

<b>JOB NUMBER:</b> 08000321A	<b>DATE:</b> NOV. 14, 2008
<b>SCALE:</b> 1"=40'	<b>LATEST REVISION:</b> AUGUST 22, 2011
<b>INDEX NUMBER:</b>	<b>DESIGN BY:</b> RTH.D.J.M.
<b>SHEET NUMBER:</b> <div style="text-align: center; font-size: 2em; font-weight: bold;">1 of 7</div>	



COPYRIGHT © 2009, MASER CONSULTING P.A. - ALL RIGHTS RESERVED  
THIS DOCUMENT IS THE PROPERTY OF MASER CONSULTING P.A. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF MASER CONSULTING P.A.

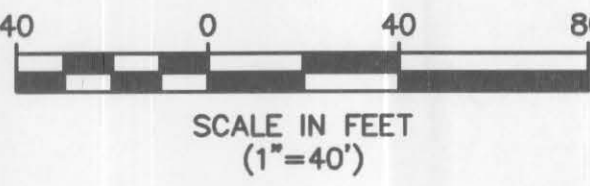


GRADING FILL VOLUME FOR  
CELL "F" AND ACCESS ROAD AREA  
6/10/11 = 3,983 CU.YDS.±  
TOTAL SITE AS OF 6/10/11 = 13,406 CU.YDS.±

GENERAL NOTES:

1. BASE MAP INFORMATION TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG ENTITLED, "BOROUGH OF CARLSTADT, BLOCK 124, LOTS 1 THROUGH 5, DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
2. EXISTING ON SITE TOPOGRAPHY BASED ON A PLAN ENTITLED, "EXISTING TOPOGRAPHIC SURVEY FOR ENTACT ENVIRONMENTAL SERVICES, 216 PATERSON PLANK ROAD, SUPERFUND SITE, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY", DATED JUNE 27, 2008, REVISED THROUGH AUGUST 14, 2008 AND PREPARED BY MASER CONSULTING, PA.
3. AS-BUILT ELEVATIONS FOR GRADING FILL OBTAINED BY MASER CONSULTING, PA ON OCTOBER 16, 2008, JANUARY 5, 2009, AND JUNE 10, 2011.
4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

LEGEND  
X 9.78 AS-BUILT GRADING FILL ELEVATION



REV.	DATE	DRAWN BY	DESCRIPTION
2.	6/13/11	RTH	REVISED TO SHOW GRADING FILL AREA F
1.	1/29/09	RTH	REVISED TO SHOW UPDATED GRADING FILL AREA

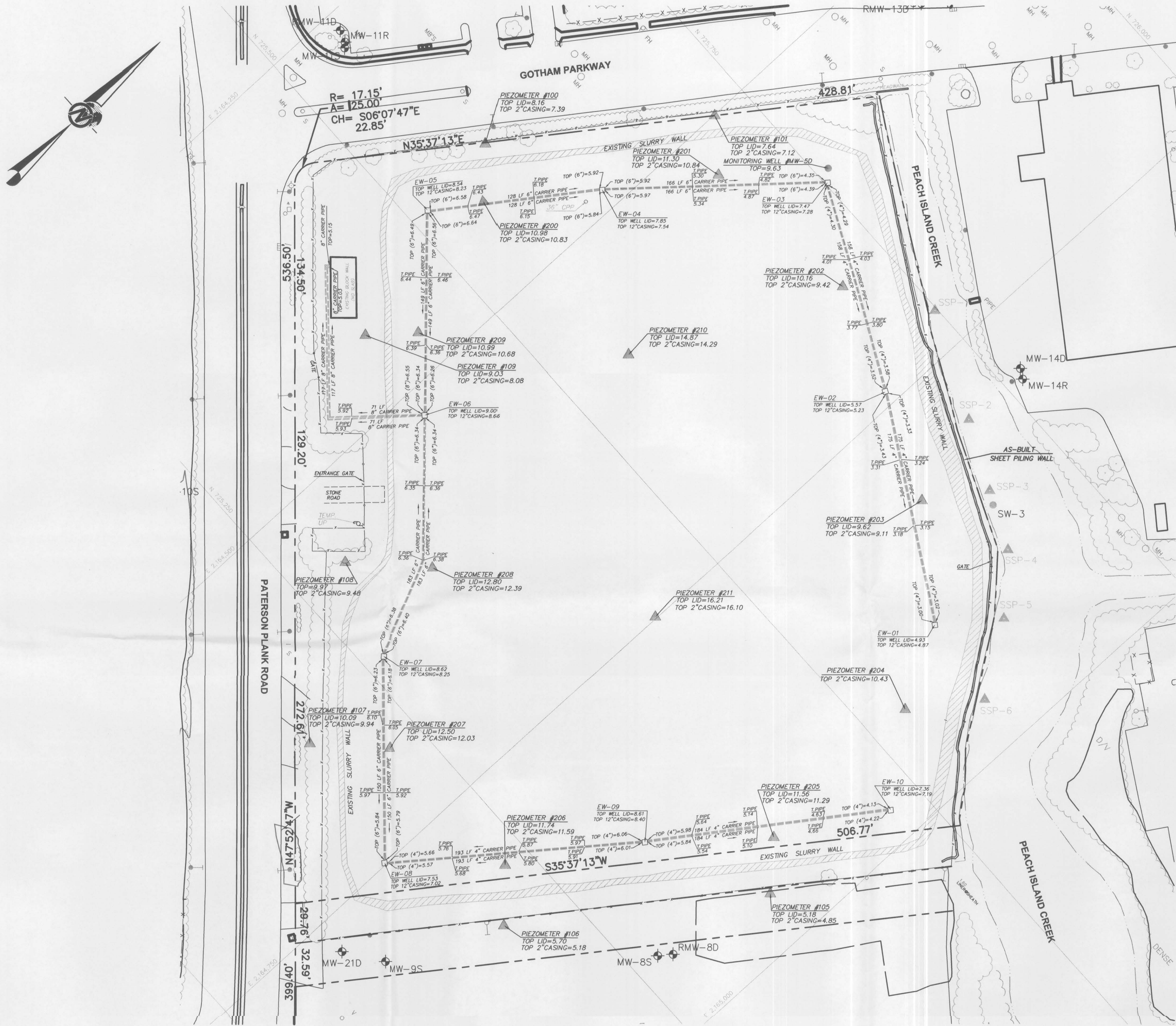
*R. Thomas Hugg*  
**R. THOMAS HUGG**  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737



**AS-BUILT GRADING FILL SURVEY**  
FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATERSON PLANK ROAD SUPERFUND SITE  
OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY  
LOTS 1-5, BLOCK 124  
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

JOB NUMBER: 08000321A	DATE: NOV. 19, 2008
SCALE: 1"=40'	LATEST REVISION: JUNE 13, 2011
INDEX NUMBER: RBSU007933	DESIGN BY: RTH/D.J.M.
SHEET NUMBER: 2	of 7





**LEGEND**

EW-02 EXTRACTION WELL NO.

40 0 40 80  
SCALE IN FEET  
(1"=40')

**GENERAL NOTES:**

1. BASE MAP INFORMATION TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG ENTITLED, "BOROUGH OF CARLSTADT, BLOCK 124, LOTS 1 THROUGH 5, DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
2. EXISTING ON SITE TOPOGRAPHY BASED ON A PLAN ENTITLED, "EXISTING TOPOGRAPHIC SURVEY FOR ENTACT ENVIRONMENTAL SERVICES, 216 PATERSON PLANK ROAD, SUPERFUND SITE, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY", DATED JUNE 27, 2008, REVISED THROUGH AUGUST 14, 2008 AND PREPARED BY MASER CONSULTING, PA.
3. AS-BUILT LOCATIONS OF EXTRACTION WELLS, CARRIER PIPES AND PIEZOMETERS OBTAINED BY MASER CONSULTING, PA ON OCTOBER 30, 2008 AND AUGUST 15, 2011.
4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

TOTAL LINEAR FEET(LF) 4" PIPE INSTALLED = 1,420  
TOTAL LINEAR FEET(LF) 6" PIPE INSTALLED = 1,552  
TOTAL LINEAR FEET(LF) 8" PIPE INSTALLED = 376

REV.	DATE	DRAWN BY	DESCRIPTION
1.	8/16/11	RTH	REVISED TO SHOW UPDATED GROUNDWATER SYSTEM
1.	3/09/09	RTH	REVISED TO SHOW UPDATED GROUNDWATER SYSTEM

*R. Thomas Hugg*  
**R. THOMAS HUGG**  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737

**MASER CONSULTING P.A.**  
Consulting, Municipal & Environmental Engineers  
Planners • Surveyors • Landscape Architects  
State of N.J. Certificate of Authorization: 24GA27986500

**RED BANK OFFICE**  
331 Newman Springs Road  
Suite 203  
Red Bank, N.J. 07701  
Phone (732) 383-1950  
Fax (732) 383-1984  
E-mail - solutions@maserconsulting.com

**Regional Offices**  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA.

**AS-BUILT GROUND WATER RECOVERY SYSTEM  
AND PIEZOMETER SURVEY**

FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATERSON PLANK ROAD SUPERFUND SITE  
OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY  
LOTS 1-5, BLOCK 124

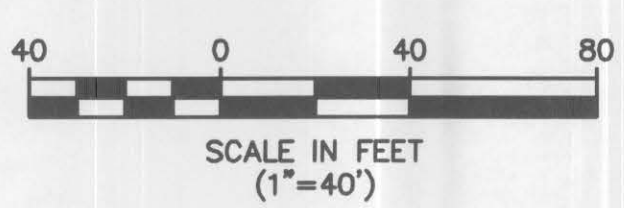
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

XOB NUMBER: 08000321A  
SCALE: 1"=40'  
INDEX NUMBER: RBSU007938  
SHEET NUMBER: 3 of 7  
DATE: NOV. 19, 2008  
LATEST REVISION: AUGUST 16, 2011  
DESIGN BY: RTH/D.J.M.





LEGEND	
E.O.P.	EDGE OF LINER PANEL
EW-06	EXTRACTION WELL NO.
P-21-20	LINER PANEL CORNER DESIGNATION
REPAIR-P-5	LINER PANEL REPAIR DESIGNATION



AREA NORTHWEST OF ACCESS ROAD (A,B,C)

GEOSYNTHETIC CLAY LINER AREA AS OF  
11/04/08 = 88,794 SQ.FT.±  
OR 9,866 SQ.YDS.±

GEOMEMBRANE CAP LINER AREA AS OF  
11/04/08 = 91,024 SQ.FT.±  
OR 10,114 SQ.YDS.±

GEOCOMPOSITE DRAINAGE LAYER AREA AS OF  
11/04/08 = 90,221 SQ.FT.±  
OR 10,025 SQ.YDS.±

AREA SOUTHEAST OF ACCESS ROAD (D,E)

GEOSYNTHETIC CLAY LINER AREA AS OF  
1/26/09 = 78,947 SQ.FT.±  
OR 8,772 SQ.YDS.±

GEOMEMBRANE CAP LINER AREA AS OF  
1/26/09 = 84,965 SQ.FT.±  
OR 9,441 SQ.YDS.±

GEOCOMPOSITE DRAINAGE LAYER AREA AS OF  
1/26/09 = 84,066 SQ.FT.±  
OR 9,341 SQ.YDS.±

AREA "F" AND ACCESS ROAD

GEOSYNTHETIC CLAY LINER AREA AS OF  
6/30/11 = 83,743 SQ.FT.±  
OR 9,305 SQ.YDS.±

GEOMEMBRANE CAP LINER AREA AS OF  
6/30/11 = 84,694 SQ.FT.±  
OR 9,410 SQ.YDS.±

GEOCOMPOSITE DRAINAGE LAYER AREA AS OF  
6/30/11 = 84,543 SQ.FT.±  
OR 9,394 SQ.YDS.±

GENERAL NOTES:

1. BASE MAP INFORMATION TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG ENTITLED, "BOROUGH OF CARLSTADT, BLOCK 124, LOTS 1 THROUGH 5, DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
2. EXISTING ON SITE TOPOGRAPHY BASED ON A PLAN ENTITLED, "EXISTING TOPOGRAPHIC SURVEY FOR ENTACT ENVIRONMENTAL SERVICES, 216 PATERSON PLANK ROAD SUPERFUND SITE, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY", DATED JUNE 27, 2008, REVISED THROUGH AUGUST 14, 2008 AND PREPARED BY MASER CONSULTING, PA.
3. AS-BUILT LOCATIONS FOR GEOSYNTHETIC CLAY LINER, GEOMEMBRANE CAP LINER, AND GEOCOMPOSITE DRAINAGE LAYER, OBTAINED BY MASER CONSULTING, PA ON NOVEMBER 4, 2008, AND JUNE 15, 2009, 2011.
4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

REV.	DATE	DRAWN BY	DESCRIPTION
2.	7/19/11	RTH	REVISED TO SHOW UPDATED LINER SURVEY
1.	3/09/09	DJM	REVISED TO SHOW UPDATED LINER SURVEY

*R. Thomas Hugg*  
**R. THOMAS HUGG**  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737

**MASER**  
CONSULTING, MUNICIPAL & ENVIRONMENTAL ENGINEERS  
Planners • Surveyors • Landscape Architects  
State of N.J. Certificate of Authorization: 24GAZ7986500

RED BANK OFFICE  
331 Newman Springs Road  
Suite 203  
Red Bank, N.J. 07701  
Phone (732) 383-1950  
Fax (732) 383-1984  
E-mail - solutions@maserconsulting.com

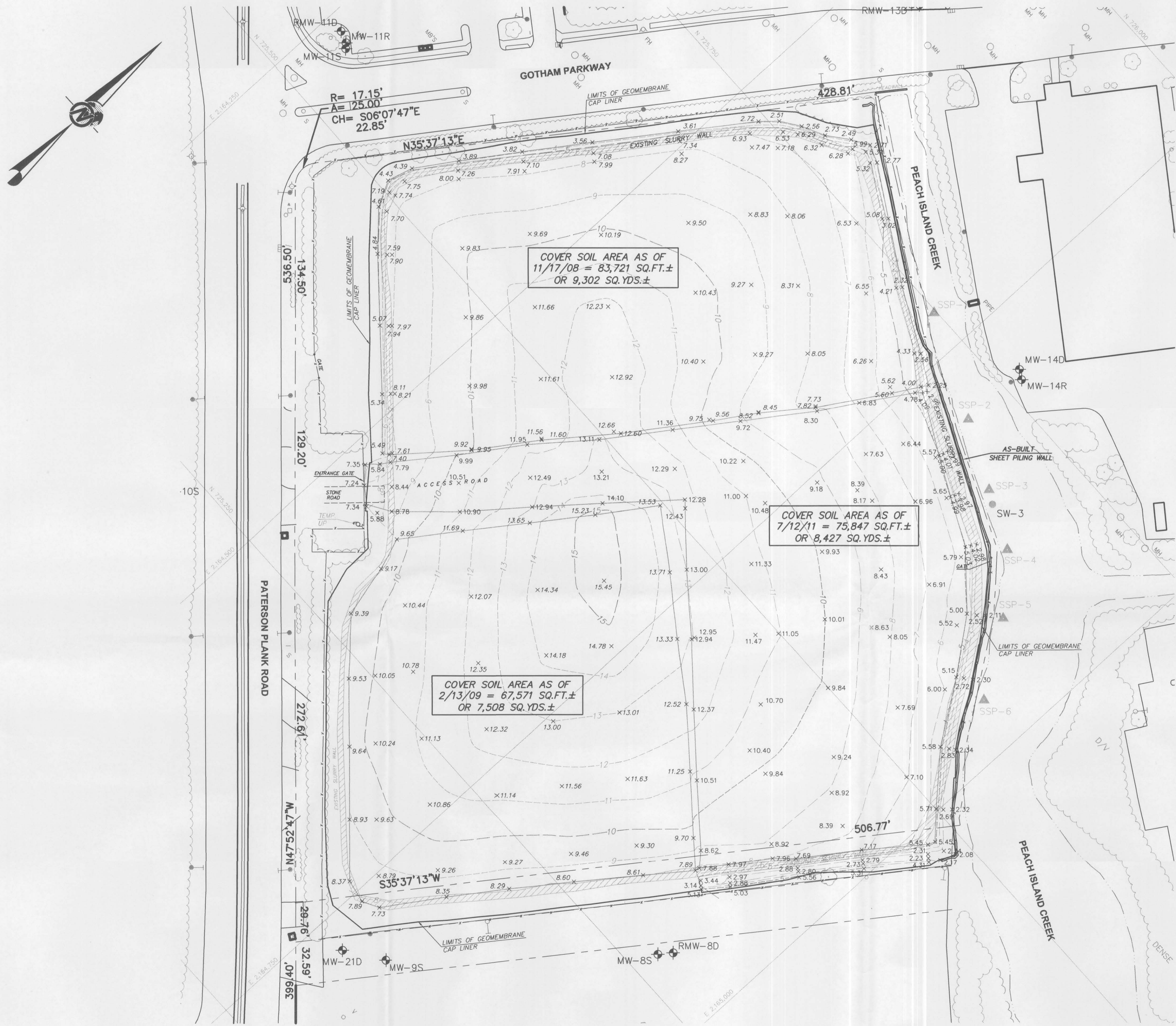
Regional Offices  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA.

AS-BUILT GEOSYNTHETIC CLAY, GEOMEMBRANE  
AND GEOCOMPOSITE LINER SURVEY  
FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATERSON PLANK ROAD SUPERFUND SITE  
OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY  
LOTS 1-5, BLOCK 124  
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

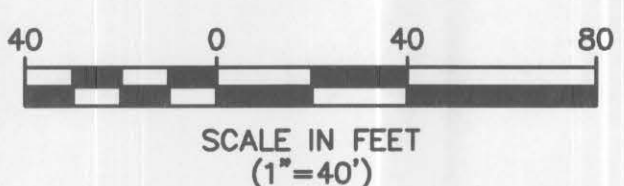
JOB NUMBER: 08000321A  
SCALE: 1"=40'  
INDEX NUMBER: RBSU007956  
DATE: NOV. 19, 2008  
LATEST REVISION: JULY 19, 2011  
DESIGN BY: RTH/D.J.M.  
SHEET NUMBER: 4 of 7



COPYRIGHT © 2008, MASER CONSULTING P.A. - ALL RIGHTS RESERVED  
THIS DOCUMENT IS THE PROPERTY OF MASER CONSULTING P.A. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN CONSENT OF MASER CONSULTING P.A.



**LEGEND**  
X 9.27 AS-BUILT COVER SOIL ELEVATION



- GENERAL NOTES:**
1. BASE MAP INFORMATION TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG ENTITLED, "BOROUGH OF CARLSTADT, BLOCK 124, LOTS 1 THROUGH 5, DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
  2. EXISTING ON SITE TOPOGRAPHY BASED ON A PLAN ENTITLED, "EXISTING TOPOGRAPHIC SURVEY FOR ENTACT ENVIRONMENTAL SERVICES, 216 PATERSON PLANK ROAD, SUPERFUND SITE, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY", DATED JUNE 27, 2008, REVISED THROUGH AUGUST 14, 2008 AND PREPARED BY MASER CONSULTING, PA.
  3. AS-BUILT ELEVATIONS FOR COVER SOIL OBTAINED BY MASER CONSULTING, PA ON NOVEMBER 17, 2008, FEBRUARY 13, 2009 AND JULY 12, 2011.
  4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

REV.	DATE	DRAWN BY	DESCRIPTION
2.	7/28/11	RTH	REVISED TO SHOW UPDATED COVER SOIL AREAS
1.	3/10/09	D.J.M.	REVISED TO SHOW UPDATED COVER SOIL AREAS

*R. Thomas Hugg*  
**R. THOMAS HUGG**  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737

**MASER**  
Consulting, Municipal & Environmental Engineers  
Planners • Surveyors • Landscape Architects  
State of N.J. Certificate of Authorization: 24GAZ7986500

RED BANK OFFICE  
331 Newman Springs Road  
Suite 203  
Red Bank, N.J. 07701  
Phone (732) 383-1950  
Fax (732) 383-1984  
E-mail - solutions@maserconsulting.com

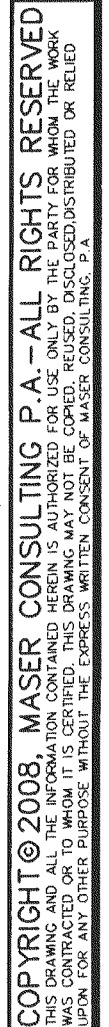
Regional Offices  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA.

**AS-BUILT COVER SOIL SURVEY**  
FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATERSON PLANK ROAD SUPERFUND SITE  
OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY  
LOTS 1-5, BLOCK 124  
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

JOB NUMBER: 08000321A  
SCALE: 1"=40'  
INDEX NUMBER: RBSU008007  
SHEET NUMBER: 5 of 7

DATE: NOV. 19, 2008  
LATEST REVISION: JULY 28, 2011  
DESIGN BY: RTH/D.J.M.





SCALE IN FEET  
(1"=40')

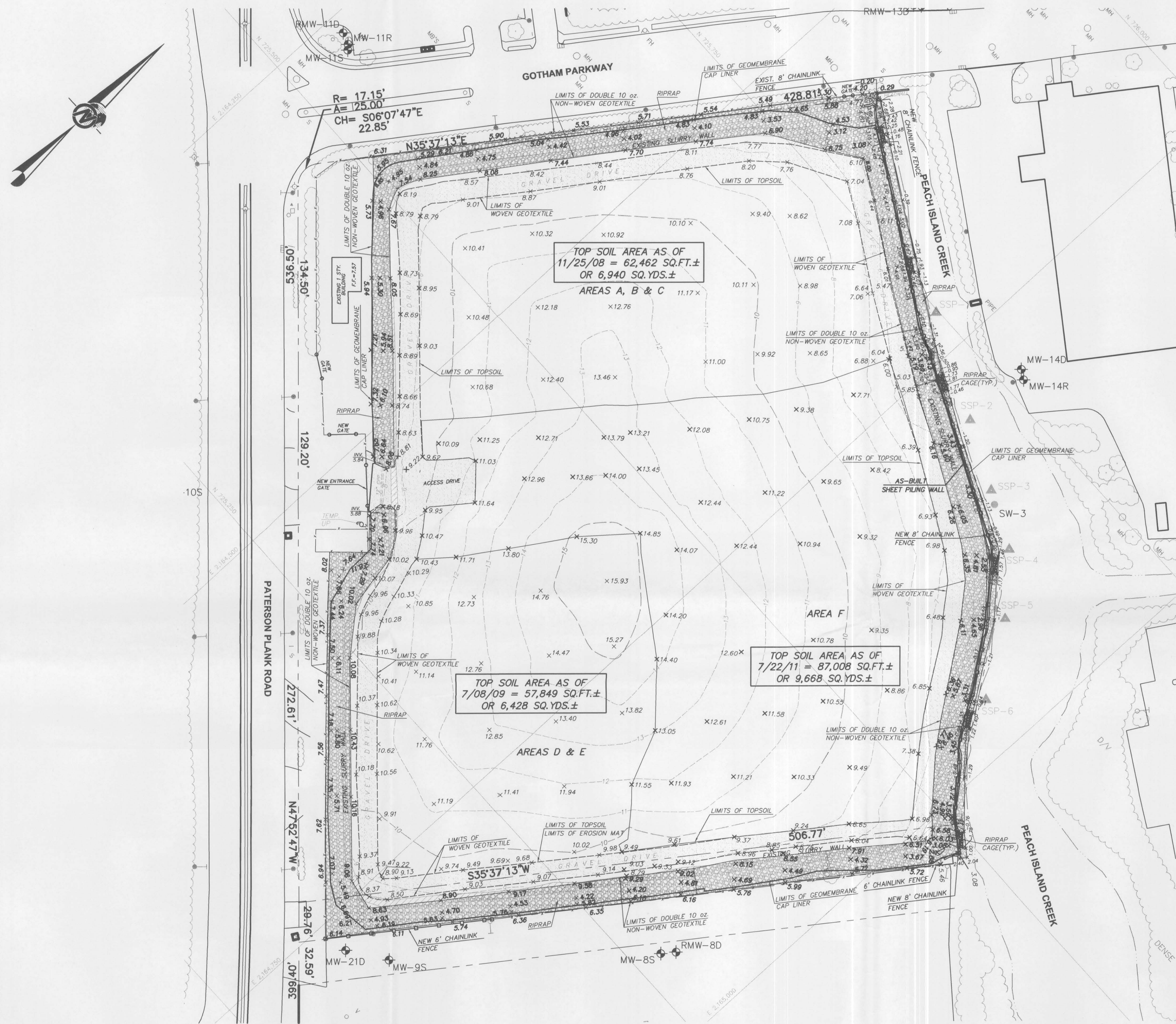
*R. Thomas Hugg*  
R. THOMAS HUGG  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737

**Regional Offices**  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA

JOB NUMBER: 08000321A	DATE: NOV. 24, 2008
SCALE: 1"=40'	LATEST REVISION:
INDEX NUMBER: RBSU008014	DESIGN BY: RTH/D.J.M.
SHEET NUMBER:	

BOROUGH OF CARLSTADT      BERGEN COUNTY      NEW JERSEY





GENERAL NOTES:

1. BASE MAP INFORMATION TAKEN FROM DIGITAL FILE 3074-02-TOPO.DWG ENTITLED, "BOROUGH OF CARLSTADT, BLOCK 124, LOTS 1 THROUGH 5, DATED DECEMBER 8, 2005, PREPARED BY PROMAPS.
2. EXISTING ON SITE TOPOGRAPHY BASED ON A PLAN ENTITLED, "EXISTING TOPOGRAPHIC SURVEY FOR ENTACT ENVIRONMENTAL SERVICES, 216 PATERSON PLANK ROAD, SUPERFUND SITE, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY", DATED JUNE 27, 2008, REVISED THROUGH AUGUST 14, 2008 AND PREPARED BY MASER CONSULTING, PA.
3. AS-BUILT ELEVATIONS FOR TOP SOIL OBTAINED BY MASER CONSULTING, PA ON NOVEMBER 25, 2008, JULY 8, 2009, AND JULY 22, 2011.
4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

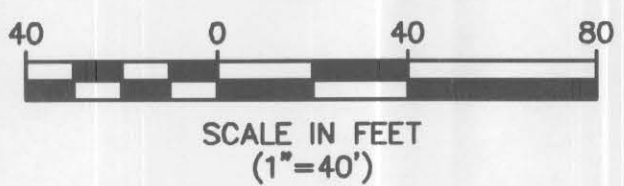
TOPSOIL EROSION MAT AREA = 62,462± SQ.FT. AS OF 1/14/09 (AREAS A, B & C)  
10 OZ. NONWOVEN GEOTEXTILE AREA = 14,462± X 2 = 28,924± SQ.FT. AS OF 1/14/09 (AREAS A, B & C)  
WOVEN GEOTEXTILE ACCESS ROAD AREA = 10,065± SQ.FT. AS OF 1/14/09 (AREAS A, B & C)  
GRAVEL ACCESS ROAD VOLUME = 158± CU. YDS. AS OF 1/14/09 (AREAS A, B & C)  
RIP RAP CHANNEL VOLUME = 561± CU. YDS. AS OF 1/14/09 (AREAS A, B & C)

TOPSOIL EROSION MAT AREA = 57,849± SQ.FT. AS OF 7/8/09 (AREAS D & E)  
10 OZ. NONWOVEN GEOTEXTILE AREA = 11,278± X 2 = 22,556 SQ.FT. AS OF 7/8/09 (AREAS D & E)  
WOVEN GEOTEXTILE ACCESS ROAD AREA = 7,620± SQ.FT. AS OF 7/8/09 (AREAS D & E)  
GRAVEL ACCESS ROAD VOLUME = 133± CU. YDS. AS OF 7/8/09 (AREAS D & E)  
RIP RAP CHANNEL VOLUME = 762± CU. YDS. AS OF 7/8/09 (AREAS D & E)

10 OZ. NONWOVEN GEOTEXTILE AREA = 10,647± X 2 = 21,294 SQ.FT. AS OF 7/22/11 (AREA F)  
WOVEN GEOTEXTILE ACCESS ROAD AREA = 10,118± SQ.FT. AS OF 7/22/11 (AREA F)  
GRAVEL ACCESS ROAD VOLUME = 208± CU. YDS. AS OF 7/22/11 (AREA F)  
RIP RAP CHANNEL VOLUME = 244± CU. YDS. AS OF 7/22/11 (AREA F)

LINEAR FOOTAGE OF NEW FENCE = 792± L.F.  
RIP RAP VOLUME FOR CREEK AREA OUTSIDE OF SHEET PILING WALL = 340± CU.YDS/ AS OF 1/14/09

LEGEND	
X 12.40	AS-BUILT TOPSOIL ELEVATION
X 8.39	AS-BUILT EDGE OF GRAVEL ELEVATION
X 6.12	AS-BUILT RIP RAP
—	NEW FENCE LINE



REV.	DATE	DRAWN BY	DESCRIPTION
3.	8/12/11	RTH	REVISED TO SHOW AS-BUILT SITE CONDITIONS
2.	7/23/09	MRM	REVISED TO SHOW AS-BUILT SITE CONDITIONS
1.	3/17/09	D.J.M.	REVISED TO SHOW AS-BUILT SITE CONDITIONS

*R. Thomas Hugg*  
**R. THOMAS HUGG**  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR U.C. NO. 36737

**MASER CONSULTING P.A.**  
Consulting, Municipal & Environmental Engineers  
Planners • Surveyors • Landscape Architects  
State of N.J. Certificate of Authorization: 24GA27986500

RED BANK OFFICE  
331 Newnan Springs Road  
Suite 203  
Red Bank, N.J. 07701  
Phone (732) 383-1950  
Fax (732) 383-1984  
E-mail - solutions@maserconsulting.com

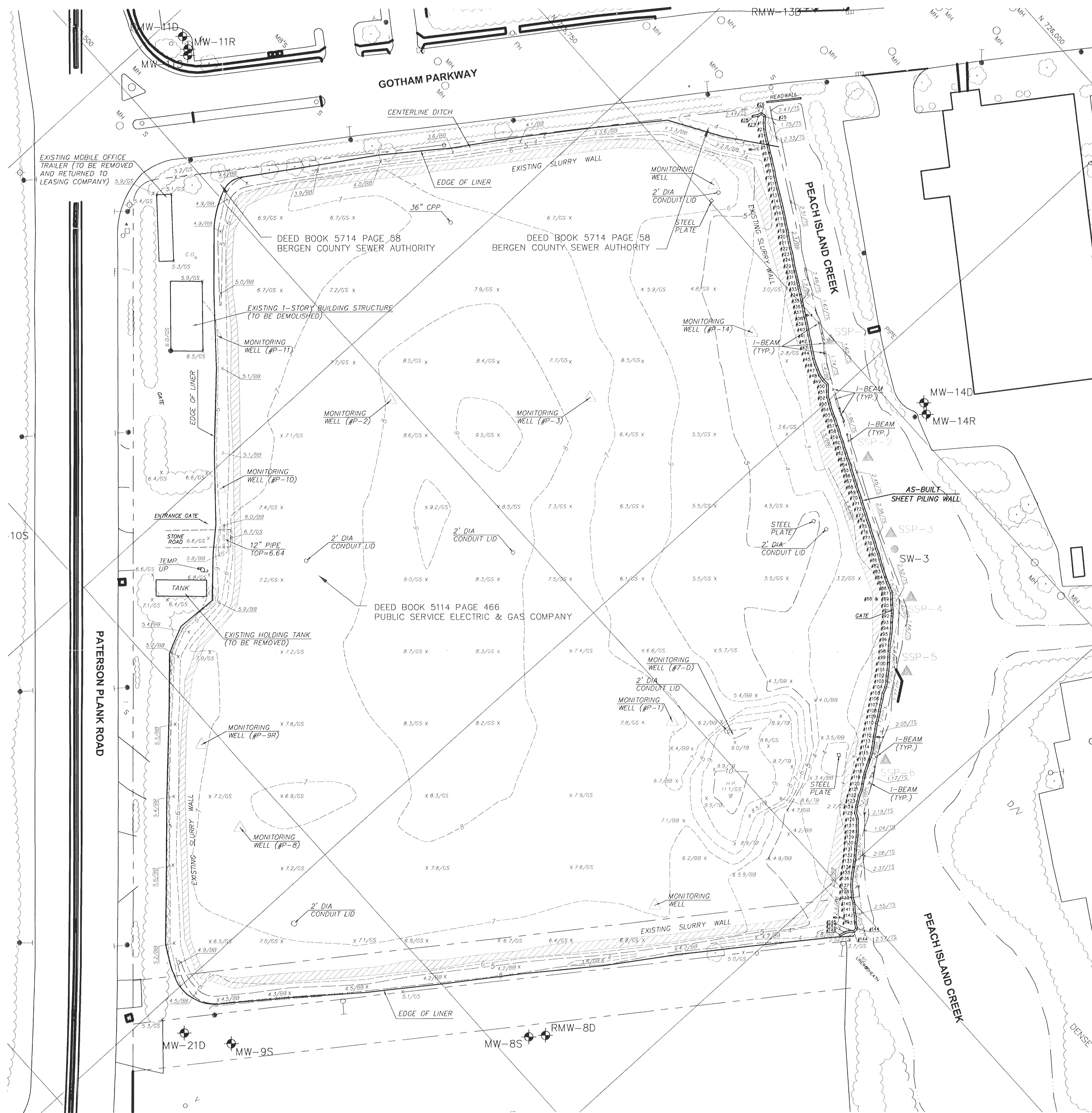
Regional Offices  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA.

**AS-BUILT FINAL SITE CONDITION SURVEY**  
FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATERSON PLANK ROAD SUPERFUND SITE  
OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY  
LOTS 1-5, BLOCK 124  
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

JOB NUMBER: 08000321A  
DATE: DEC. 1, 2008  
SCALE: 1"=40'  
LATEST REVISION: AUGUST 12, 2011  
INDEX NUMBER: RGSU008761  
DESIGN BY: RTH/D.J.M.  
SHEET NUMBER: 7 of 7



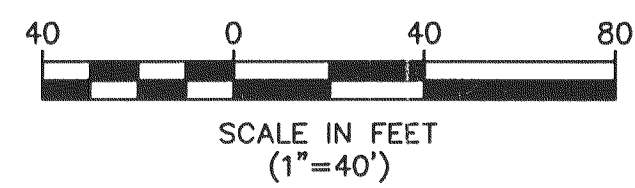
COPYRIGHT © 2008 MASER CONSULTING P.A. ALL RIGHTS RESERVED.  
THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.  
THIS DOCUMENT IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.



**LEGEND**

GS	GROUND SHOT	BB	BOTTOM OF BANK
TB	TOP OF BANK	TS	TOP OF OLD SHEATHING
#32	NEW SHEET PILING #		

HORIZONTAL DATUM NAD 1927  
VERTICAL DATUM NAVD 1983  
AS-BUILT SHEET PILING LOCATIONS OBTAINED BETWEEN JUNE 19 AND JULY 16, 2008.



Sheet Piling #	Top Sheet Pile Elev.	Final Top Sheet Pile Elev.	Cut-off difference (feet)	Bottom Tip Elev.	Final Top Sheet Pile Elev.	Total Length (feet)
1	7.47	6.06	1.41	32.53	6.06	38.59
2	7.44	6.07	1.37	32.56	6.07	38.63
3	7.50	6.08	1.42	32.50	6.08	38.58
4	7.44	6.08	1.36	32.56	6.08	38.64
5	7.52	6.08	1.44	32.48	6.08	38.66
6	6.98	6.08	0.90	33.02	6.08	39.10
7	7.13	6.07	1.06	32.87	6.07	38.94
8	7.04	6.08	0.96	32.96	6.08	39.04
9	7.07	6.09	0.98	32.93	6.09	39.02
10	7.06	6.09	0.97	32.94	6.09	39.03
11	7.18	6.11	1.07	32.82	6.11	38.93
12	7.30	6.11	1.19	32.70	6.11	38.81
13	7.36	6.10	1.26	32.64	6.10	38.74
14	7.28	6.09	1.19	32.72	6.09	38.81
15	7.35	6.09	1.26	32.65	6.09	38.74
16	7.38	6.09	1.29	32.62	6.09	38.71
17	7.39	6.10	1.29	32.61	6.10	38.71
18	7.44	6.12	1.32	32.56	6.12	38.68
19	7.51	6.11	1.40	32.49	6.11	38.60
20	7.53	6.11	1.42	32.47	6.11	38.58
21	7.65	6.09	1.56	32.35	6.09	38.44
22	7.75	6.08	1.67	32.25	6.08	38.34
23	8.49	6.10	2.39	31.51	6.10	37.61
24	8.14	6.10	2.04	31.86	6.10	37.96
25	7.45	6.06	1.39	32.55	6.06	38.61
26	7.61	6.08	1.53	32.40	6.08	38.48
27	7.74	6.07	1.67	32.25	6.07	38.31
28	7.72	6.07	1.65	32.28	6.07	38.35
29	12.48	6.12	6.36	27.52	6.12	33.64
30	7.26	6.08	1.18	32.74	6.08	38.82
31	6.54	6.08	0.46	33.66	6.08	39.54
32	6.49	6.05	0.43	33.51	6.05	39.57
33	3.79	2.05	1.73	36.21	2.05	38.27
34	6.56	6.09	0.47	33.44	6.09	39.53
35	6.50	6.10	0.40	33.50	6.10	39.60
36	6.45	6.09	0.36	33.55	6.09	39.64
37	6.46	6.09	0.37	33.54	6.09	39.63
38	6.55	6.11	0.44	33.45	6.11	39.56
39	6.58	6.07	0.51	33.42	6.07	39.49
40	6.64	6.08	0.56	33.36	6.08	39.44
41	6.49	6.09	0.40	33.51	6.09	39.60
42	6.60	6.09	0.51	33.40	6.09	39.49
43	6.51	6.10	0.41	33.49	6.10	39.59
44	6.47	6.08	0.39	33.53	6.08	39.61
45	6.62	6.07	0.55	33.38	6.07	39.45
46	6.69	6.08	0.61	33.31	6.08	39.39
47	6.61	6.08	0.53	33.39	6.08	39.47
48	6.98	6.07	0.91	33.02	6.07	39.09
49	9.85	6.08	3.77	30.15	6.08	36.23
50	10.25	6.07	4.18	29.75	6.07	35.82
51	6.80	6.07	0.73	33.20	6.07	39.27
52	6.93	6.08	0.85	33.07	6.08	39.15
53	6.92	6.09	0.83	33.08	6.09	39.17
54	6.91	6.08	0.83	33.09	6.08	39.17
55	6.97	6.09	0.88	33.03	6.09	39.12
56	4.07	2.16	1.91	40.93	2.16	43.09
57	6.76	6.08	0.68	33.24	6.08	39.32
58	6.73	6.08	0.65	33.27	6.08	39.35
59	6.74	6.08	0.66	33.26	6.08	39.34
60	6.70	6.09	0.61	33.30	6.09	39.39
61	6.78	6.09	0.69	33.22	6.09	39.31
62	6.87	6.09	0.78	33.13	6.09	39.22
63	6.90	6.07	0.83	33.10	6.07	39.17
64	6.96	6.08	0.88	33.04	6.08	39.12
65	6.96	6.08	0.88	33.04	6.08	39.12
66	7.02	6.10	0.92	32.98	6.10	39.08
67	6.95	6.08	0.87	33.05	6.08	39.13
68	6.97	6.10	0.87	33.03	6.10	39.13
69	7.03	6.08	0.95	32.97	6.08	39.05
70	7.01	6.08	0.93	32.99	6.08	39.07
71	6.98	6.09	0.89	33.01	6.09	39.10
72	7.03	6.07	0.96	32.97	6.07	39.04
73	7.06	6.09	0.97	32.94	6.09	39.03
74	7.15	6.11	1.04	32.85	6.11	38.96
75	7.34	6.10	1.24	32.66	6.10	38.76
76	7.30	6.10	1.20	32.70	6.10	38.80
77	7.37	6.08	1.29	32.63	6.08	38.71
78	7.43	6.06	1.37	32.57	6.06	38.63
79	7.48	6.09	1.39	32.52	6.09	38.61
80	7.43	6.12	1.31	32.57	6.12	38.69
81	7.48	6.09	1.39	32.52	6.09	38.61
82	7.51	6.11	1.40	32.49	6.11	38.60
83	7.66	5.99	1.67	32.34	5.99	38.33
84	7.60	5.97	1.63	32.40	5.97	38.37
85	7.41	5.94	1.47	32.59	5.94	38.53
86	7.21	6.02	1.19	32.78	6.02	38.81
87	6.75	6.03	0.72	33.25	6.03	39.28
88	6.69	6.08	0.61	33.31	6.08	39.39
89	6.69	6.08	0.61	33.31	6.08	39.39
90	6.73	6.02	0.71	33.19	6.02	39.21
91	6.81	5.99	0.82	33.15	5.99	39.14
92	6.85	2.01	4.84	38.24	2.01	40.25
93	6.76	5.97	0.79	33.33	5.97	39.30
94	6.67	5.95	0.72	33.30	5.95	39.25
95	6.70	5.93	0.77	33.29	5.93	39.22
96	6.73	5.94	0.79	33.29	5.94	39.23
97	6.64	5.94	0.70	33.36	5.94	39.30
98	6.71	5.94	0.77	33.29	5.94	39.23
99	6.71	5.95	0.76	33.29	5.95	39.24
100	7.47	5.95	1.52	32.53	5.95	38.48
101	6.85	5.94	0.91	33.15	5.94	39.09
102	6.84	5.98	0.86	33.16	5.98	39.14
103	7.05	5.99	1.06	32.95	5.99	39.04
104	6.91	5.99	0.92	33.09	5.99	39.08
105	6.71	5.99	0.72	33.29	5.99	39.28
106	6.74	6.00	0.74	33.25	6.00	39.26
107	6.61	5.98	0.63	33.39	5.98	39.37
108	6.82	5.99	0.83	33.18	5.99	39.17
109	6.79	5.99	0.80	33.21	5.99	39.20
110	6.85	6.01	0.84	33.15	6.01	39.16
111	7.18	6.02	1.16	32.82	6.02	38.84
112	7.23	6.03	1.20	32.77	6.03	38.80
113	7.40	5.99	1.41	32.60	5.99	38.59
114	6.99	5.99	1.00	33.01	5.99	39.00
115	6.85	6.01	0.84	33.16	6.01	39.17
116	7.04	6.03	1.01	32.96	6.03	38.99
117	7.65	6.02	1.63	32.35	6.02	38.37
118	7.09	6.00	1.09	33.09	6.00	39.09
119	7.08	1.95	5.13	42.92	1.95	44.87
120	7.55	5.96	1.59	32.45	5.96	38.41
121	7.50	5.98	1.52	32.50	5.98	38.48
122	8.86	5.97	2.89	41.14	5.97	47.11
123	7.30	5.97	1.33	32.70	5.97	38.67
124	7.11	5.95	1.16	32.69	5.95	38.64
125	7.54	5.95	1.59	32.46	5.95	38.49
126	7.81	5.96	1.85	32.19	5.96	38.15
127	7.00	5.97	1.03	33.00	5.97	38.97
128	7.22	5.95	1.27	32.78	5.95	38.73
129	7.50	5.94	1.56	32.50	5.94	38.44
130	7.32	5.93	1.39	32.68	5.93	38.61
131	7.28	5.93	1.35	32.67	5.93	38.60
132	7.62	5.95	1.67	32.38	5.95	38.33
133	7.71	5.95	1.76	32.29	5.95	38.24
134	7.60	5.96	1.64	32.40	5.96	38.36
135	7.73	5.97	1.76	32.27	5.97	38.24
136	7.61	5.97	1.64	32.39	5.97	38.36
137	7.52	5.96	1.56	32.48	5.96	38.44
138	7.46	5.94	1.52	32.54	5.94	38.48
139	8.42	5.96	2.46	41.58	5.96	47.54
140	8.52	5.95	2.57	41.48	5.95	47.43
141	8.01	5.96	2.05	41.99	5.96	47.95
142	7.73	3.85	3.88	42.27	3.85	44.12
143	8.33	5.94	2.39	41.67	5.94	47.61
144	8.00	5.95	2.05	41.95	5.95	47.95
145	7.97	5.97	2.00	42.03	5.97	48.00
146	7.84	5.97	1.87	42.16	5.97	48.13
147	7.68	5.97	1.71	42.32	5.97	48.29
148	7.54	5.95	1.59	42.46	5.95	48.41

196.92' total cut-off

**MASER**  
CONSULTING P.A.  
Consulting, Municipal & Environmental Engineers  
Planners • Surveyors • Landscape Architects  
State of N.J. Certificate of Authorization: 24GA27866500  
E-mail: solutions@maserconsulting.com

RED BANK OFFICE  
331 Newman Springs Road  
Suite 203  
Red Bank, N.J. 07701  
Phone (732) 383-1950  
Fax (732) 383-1984  
E-mail: solutions@maserconsulting.com

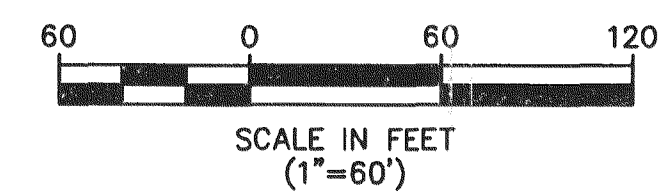
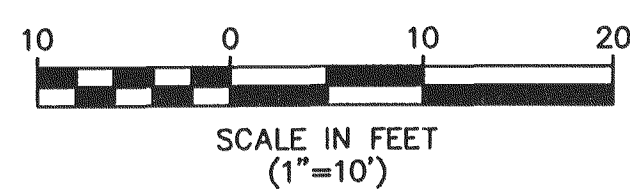
Regional Offices  
Clinton, N.J.  
Hamilton, N.J.  
Logan, N.J.  
Mt. Arlington, N.J.  
West Nyack, N.Y.  
Newburgh, N.Y.  
Bethlehem, PA.

**R. THOMAS HUGG**  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR L.C. NO. 36737

**SHEET PILING AS-BUILT**  
FOR  
**ENTACT ENVIRONMENTAL SERVICES**  
216 PATTERSON PLANK ROAD SUPERFUND SITE  
LOTS 1-5, BLOCK 124  
BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

JOB NUMBER: 08000321A  
DATE: JULY 22, 2008  
SCALE: 1"=40'  
INDEX NUMBER: RBSU006819  
DESIGN BY: RTH  
SHEET NUMBER: 1 of 1





1. THE SOLE PURPOSE OF THIS PLAN IS TO SHOW THE AS-BUILT POST-EXCAVATION TOPOGRAPHY OF THE "HOT SPOT" AREA AT THE PROJECT SITE.
2. AS-BUILT POST-EXCAVATION ELEVATIONS OBTAINED BY MASER CONSULTING, PA ON MULTIPLE DATES FROM 9/8/10 THROUGH 10/12/10.
3. ALL OTHER TOPOGRAPHY SHOWN HEREON BASED ON A PLAN ENTITLED, "AS-BUILT FINAL SITE CONDITION SURVEY FOR ENACT ENVIRONMENTAL SERVICE, 216 PATERSON PLANK ROAD SUPERFUND SITE, OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY, DATED 12/1/08, REVISED THRU 7/23/09, AND PREPARED BY MASER CONSULTING P.A.
4. CONTOURS SHOWN OUTSIDE OF HOT SPOT EXCAVATION AREA ARE PRE-EXCAVATION CONTOURS.
5. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

X -3.40 AS-BUILT POST-EXCAVATION ELEVATION  
TB10 TRENCH BOX NO.

3.	3/21/11	RTH	GENERAL REVISIONS PER GOLDER ASSOC. REQUEST 3/21/11
2.	3/16/11	RTH	GENERAL REVISIONS PER GOLDER ASSOC. REQUEST 3/16/11
1.	12/30/10	RTH	GENERAL REVISIONS PER CLIENTS REQUEST 12/10/10
REV.	DATE	DRAWN BY	DESCRIPTION

*R. Thomas Hugg*  
R. THOMAS HUGG  
NEW JERSEY PROFESSIONAL  
LAND SURVEYOR LIC. NO. 36737

**MASER**  
CONSULTING P.A.  
Consulting, Municipal & Environmental Engineers  
Planners ■ Surveyors ■ Landscape Architects  
State of N.J. Certificate of Authorization: 24GA279865

**MARMORA OFFICE**  
156 Stagecoach Road  
Marmora, N.J. 08223  
Phone (609) 390-1927  
Fax (609) 390-0040  
E-mail - [solutions@maserconsulting.com](mailto:solutions@maserconsulting.com)

**Regional Offices**  
 Red Bank, N.J.  
 Clinton, N.J.  
 Hamilton, N.J.  
 Logan, N.J.  
 Mt. Arlington, N.J.  
 Chestnut Ridge, N.Y.  
 Newburgh, N.Y.  
 Bethlehem, PA.

PROJECT RECORD AS-BUILT POST-EXCAVATION SURVEY

FOR  
WRSCompass, INC.

HOT SPOT, 216 PATERSON PLANK ROAD SITE  
OPERABLE UNIT NO.2 (OU-2) REMEDY  
LOTS 1-5, BLOCK 124

JOB NUMBER: 10000739A	DATE: NOV. 18, 2010
--------------------------	------------------------

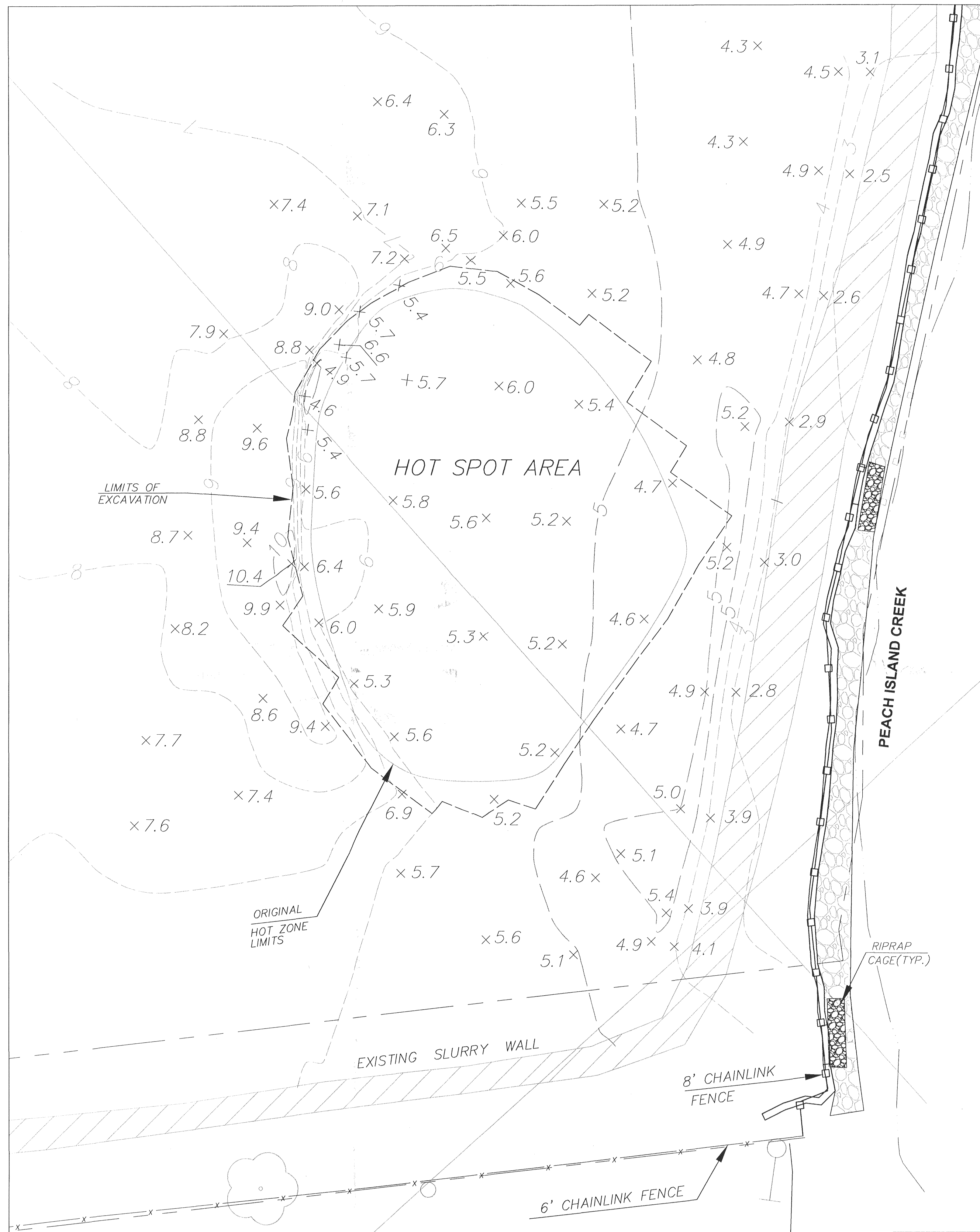
SCALE: 1"=40'	LATEST REVISION: MARCH 21, 2011
------------------	------------------------------------

INDEX NUMBER: MASU000487	DESIGN BY: RTH/D.J.M.
-----------------------------	--------------------------

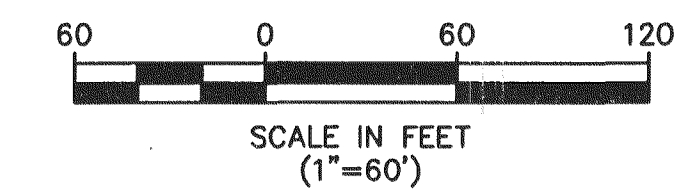
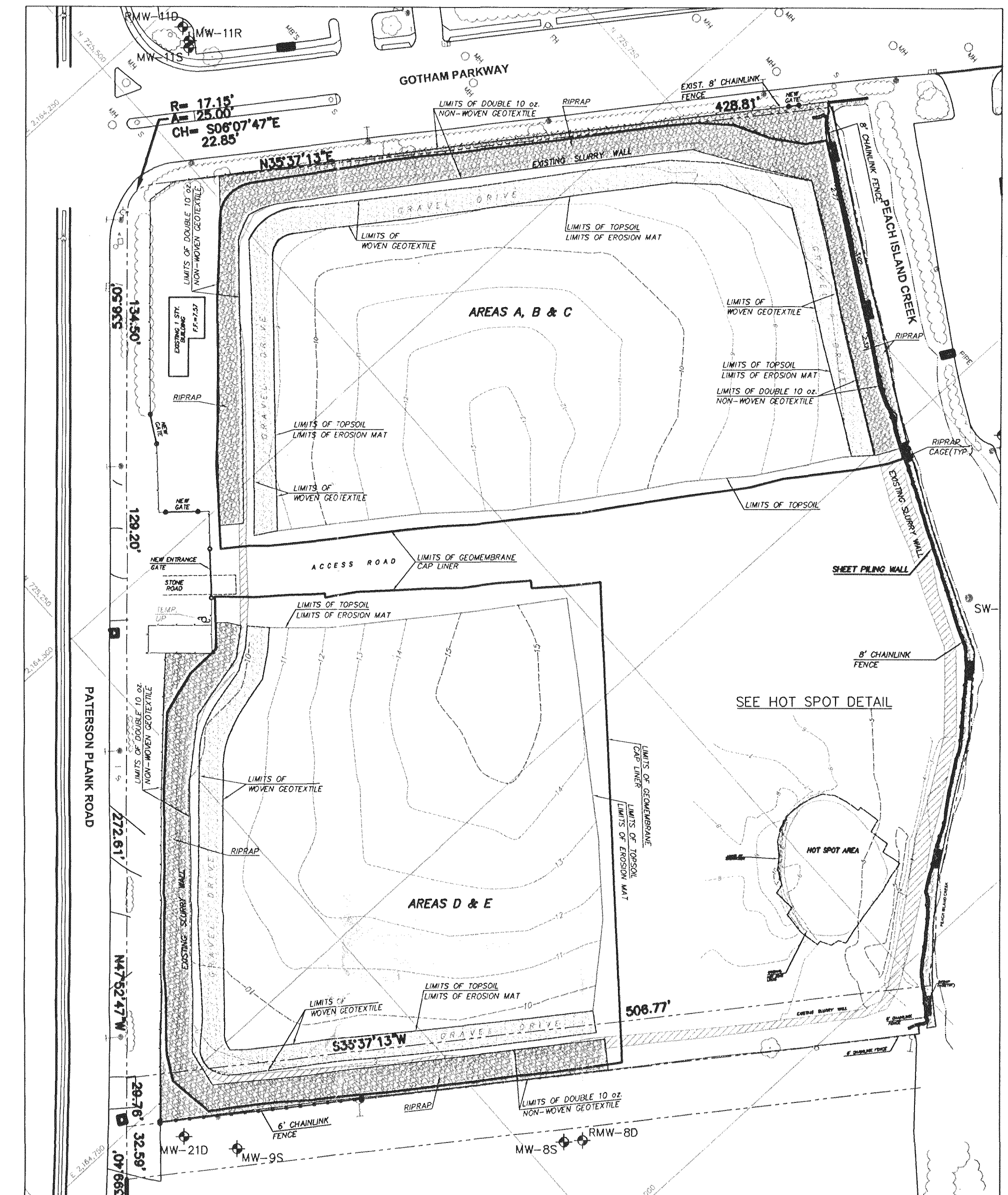
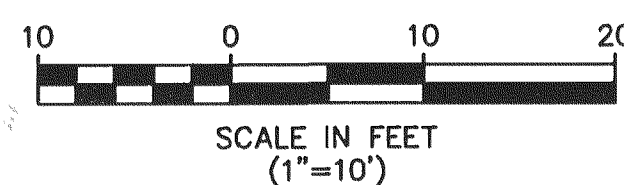
SHEET NUMBER: 1 6 1

1 of 1





HOT SPOT AREA DETAIL



GENERAL NOTES

1. THE SOLE PURPOSE OF THIS PLAN IS TO SHOW THE AS-BUILT TOP OF DGA BACKFILL TOPOGRAPHY OF THE "HOT SPOT" AREA AT THE PROJECT SITE.
2. AS-BUILT TOP OF DGA BACKFILL ELEVATIONS OBTAINED BY MASER CONSULTING, PA ON NOVEMBER 3, 2010.
3. ALL OTHER TOPOGRAPHY SHOWN HEREON BASED ON A PLAN ENTITLED, "AS-BUILT FINAL SITE CONDITION SURVEY FOR ENTACT ENVIRONMENTAL SERVICE, 216 PATERSON PLANK ROAD SUPERFUND SITE, OPERABLE UNIT NO.2 (OU-2) FINAL REMEDY, LOTS 1-5, BLOCK 124, BOROUGH OF CARLSTADT, BERGEN COUNTY, NEW JERSEY, DATED 12/1/08, REVISED THRU 7/23/09, AND PREPARED BY MASER CONSULTING P.A.
4. HORIZONTAL DATUM NAD 1927, VERTICAL DATUM NAVD 1988.

LEGEND

X 5.3 AS-BUILT TOP OF DGA ELEVATION

REV.	DATE	DRAWN BY	DESCRIPTION
2.	3/21/11	RTH	GENERAL REVISIONS PER GOLDER ASSOC. REQUEST 3/21/11
1.	3/16/11	RTH	GENERAL REVISIONS PER GOLDER ASSOC. REQUEST 3/11/11

*R. Thomas Hugg*  
**R. THOMAS HUGG**  
 NEW JERSEY PROFESSIONAL  
 LAND SURVEYOR LIC. NO. 36737



MARMORA OFFICE  
 156 Stagecoach Road  
 Marmora, N.J. 08223  
 Phone (609) 390-1927  
 Fax (609) 390-0040

PROJECT RECORD AS-BUILT TOP OF DGA SURVEY  
 FOR  
**WRSCo, Inc.**  
 HOT SPOT, 216 PATERSON PLANK ROAD SITE  
 OPERABLE UNIT NO.2 (OU-2) REMEDY  
 LOTS 1-5, BLOCK 124  
 BOROUGH OF CARLSTADT BERGEN COUNTY NEW JERSEY

Regional Offices Red Bank, N.J. Clinton, N.J. Hamilton, N.J. Logan, N.J. Mt. Arlington, N.J. Chestnut Ridge, N.Y. Newburgh, N.Y. Bethlehem, PA.	JOB NUMBER: 10000739A	DATE: NOV. 18, 2010
SCALE: 1"=40'	LATEST REVISION: MARCH 21, 2011	DESIGN BY: RTH/D.J.M.
INDEX NUMBER: MASU000485	SHEET NUMBER: 1	of 1





















# CERTIFICATE

Date Issued 5/27/09  
Control #  
Permit # 08-377

## IDENTIFICATION

Block 124 Lot 1-5  
Work Site Location 216 PATERSON PLK. RD.  
CARLSTADT, NJ  
Owner in Fee 216 PATERSON PLK. RD. CO-OPERATING PRP GROUP  
Address C/O GOLDBERG ASSOC. INC. 744 BROAD ST. 25TH FL.  
STE. 2500 NEWARK, NJ 07102  
Tele. ( )  
Contractor LIAM CONSTRUCTION, INC.  
Address 287 RT. 94  
VERNON, NJ 07462  
Tele. ( )  
Lic. No. or Bldrs. Reg. No. 223071634  
Federal Emp. No.  
or Social Security No.

Home Warranty No.  
Use Group U  
Maximum Live Load  
Description of Work/Use:

NEW TANK BUILDING

Type of Warranty Plan: [ ] State [ ] Private  
Construction Classification  
Maximum Occupancy Load

## CERTIFICATE OF OCCUPANCY/APPROVAL

### ☐ CERTIFICATE OF OCCUPANCY


This serves notice that said building, structure, or equipment has been constructed or installed in accordance with the New Jersey Uniform Construction Code, and is approved for use and/or occupancy.

### ☐ CERTIFICATE OF CONTINUED OCCUPANCY

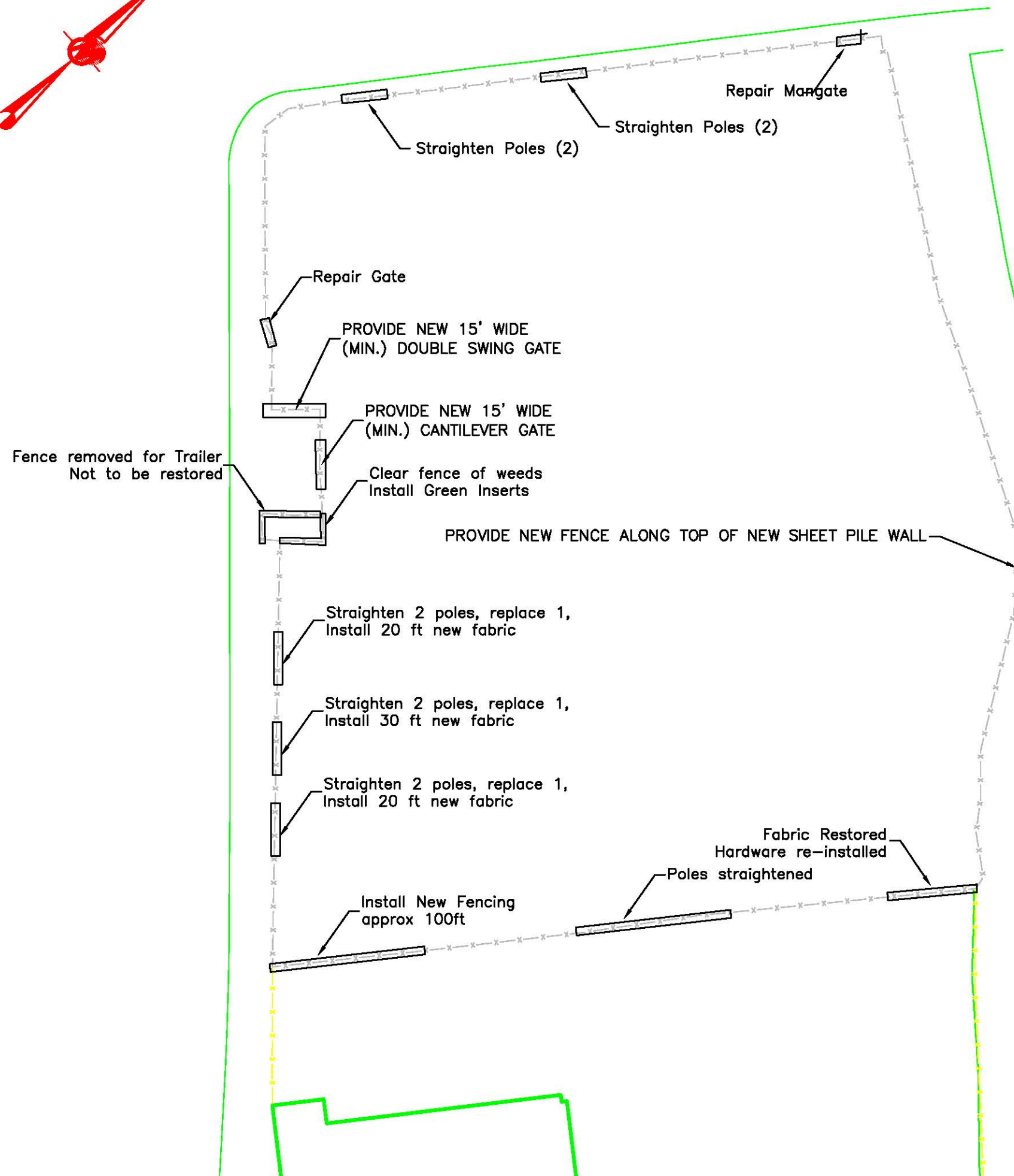
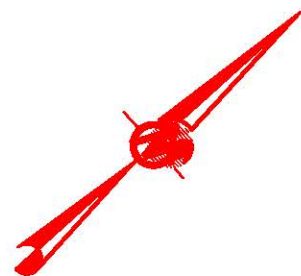
This serves notice that based on a general inspection of the visible parts of the building there are no imminent hazards and the building is approved for continued occupancy.

### ☐ TEMPORARY CERTIFICATE OF OCCUPANCY

If this is a Temporary Certificate of Occupancy the following conditions must be met no later than \_\_\_\_\_, 19\_\_\_\_ or the owner will be subject to a fine or order to vacate:

  
CONSTRUCTION OFFICIAL F. RECANATI

Fee \$  
Paid [ ] Check No.  
Collected by:



## NOTES

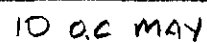
- 1.) ALL LOCATIONS APPROXIMATE.
- 2.) CONTRACTOR SHALL DEVELOP, PREPARE, AND SUBMIT, AS PART OF ITS REQUISITE SHOP DRAWINGS, TYPICAL FENCE AND GATE DESIGN DETAILS, AS SPECIFIED AND INDICATED HEREIN.
- 3.) CONTRACTOR SHALL INSTALL NEW FENCING ALONG TOPS OF THE NEW SHEET PILE WALL. THIS FENCE SHALL BE PHYSICALLY ATTACHED/SECURED TO THE INSTALLED NEW SHEET PILE SECTIONS, AND CONTRACTOR SHALL DEVELOP, PREPARE, AND SUBMIT CORRESPONDING DETAILS SHOWING HOW THIS FENCE SHALL BE ATTACHED/SECURED TO THE INSTALLED NEW SHEET PILE SECTIONS.
- 4.) CONTRACTOR SHALL EXTEND THE MESH FENCING PANELS VERTICALLY DOWNWARD AT EACH DISCHARGE WEIR LOCATION (SEE DRAWING SCP-11), AND THESE DETAILS SHALL BE INCORPORATED INTO CONTRACTOR'S REQUISITE SHOP DRAWINGS.
- 5.) SEE SECTION 02831 OF THE TECHNICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS WITH RESPECT TO THE SPECIFIED CHAIN LINK FENCE AND GATE INSTALLATION WORK.
- 6.) CONTRACTOR MAY ELECT TO REMOVE PORTIONS OF THE EXISTING PERIMETER FENCE DURING CONSTRUCTION TO ACCOMMODATE ITS ACTIVITIES, AND CONTRACTOR SHALL PROVIDE TEMPORARY ACCESS RESTRICTIONS IN AREAS WHERE THE EXISTING FENCE IS REMOVED. ALL REMOVED SECTIONS OF EXISTING FENCE SHALL BE RESTORED TO ITS ORIGINAL CONDITION, OR BETTER, UPON COMPLETION OF CONSTRUCTION.

## REFERENCES

- 1.) BASE MAP SHOWN TAKEN FROM DIGITAL FILE 3074-02-TOPG.DWG, ENTITLED "BOROUGH OF CARLSTADT BLOCK 124 LOTS 1 THROUGH 5," DATED DECEMBER 6, 2005, PREPARED BY PROMAPS.
- 2.) HORIZONTAL DATUM REFERENCES THE NEW JERSEY STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83). VERTICAL DATUM REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

40 0 40 80  
SCALE FEET

**FENCE RESTORATION PLAN  
STATUS AS OF 12/04/08  
MARKED WITH REPAIR/REPLACE**





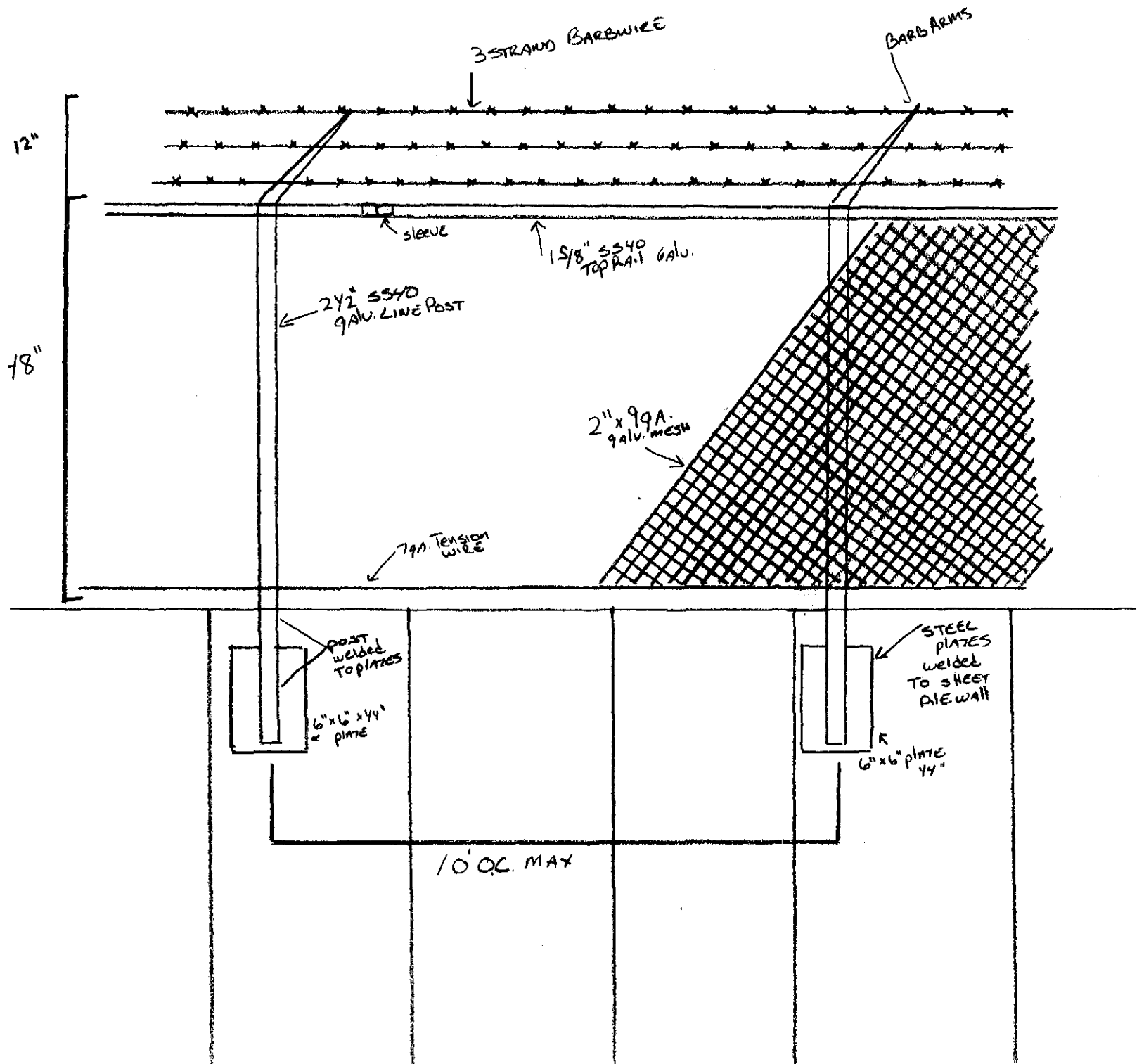
# ANCHOR

FENCE CONTRACTORS, INC.

Office: (201) 722-0789

270 Knickerbocker Avenue  
Hillsdale, NJ 07642

Fax: (201) 722-2549



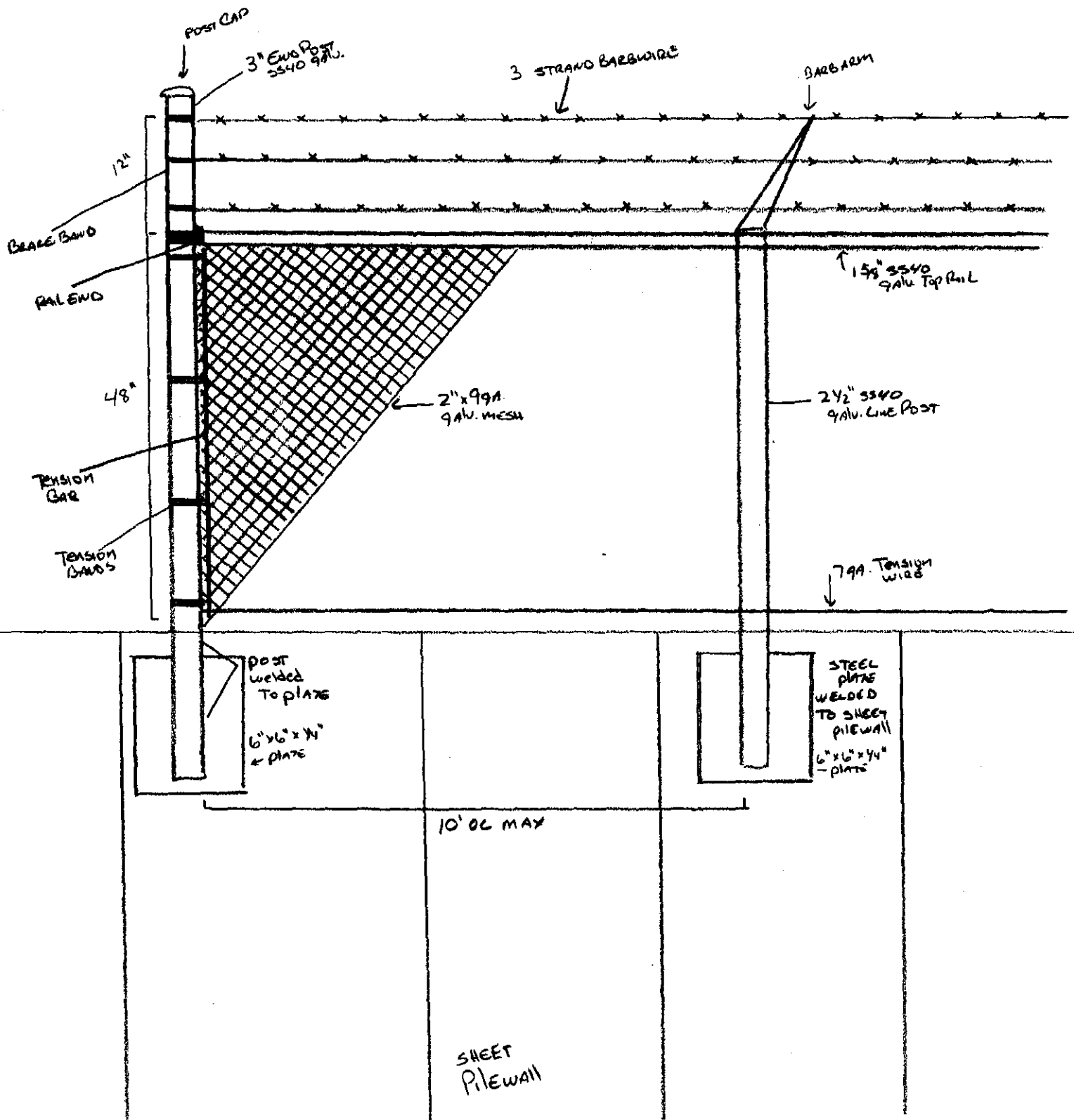
# ANCHOR

FENCE CONTRACTORS, INC.

270 Knickerbocker Avenue  
Hillsdale, NJ 07642

Fax: (201) 722-2549

Office: (201) 722-0789

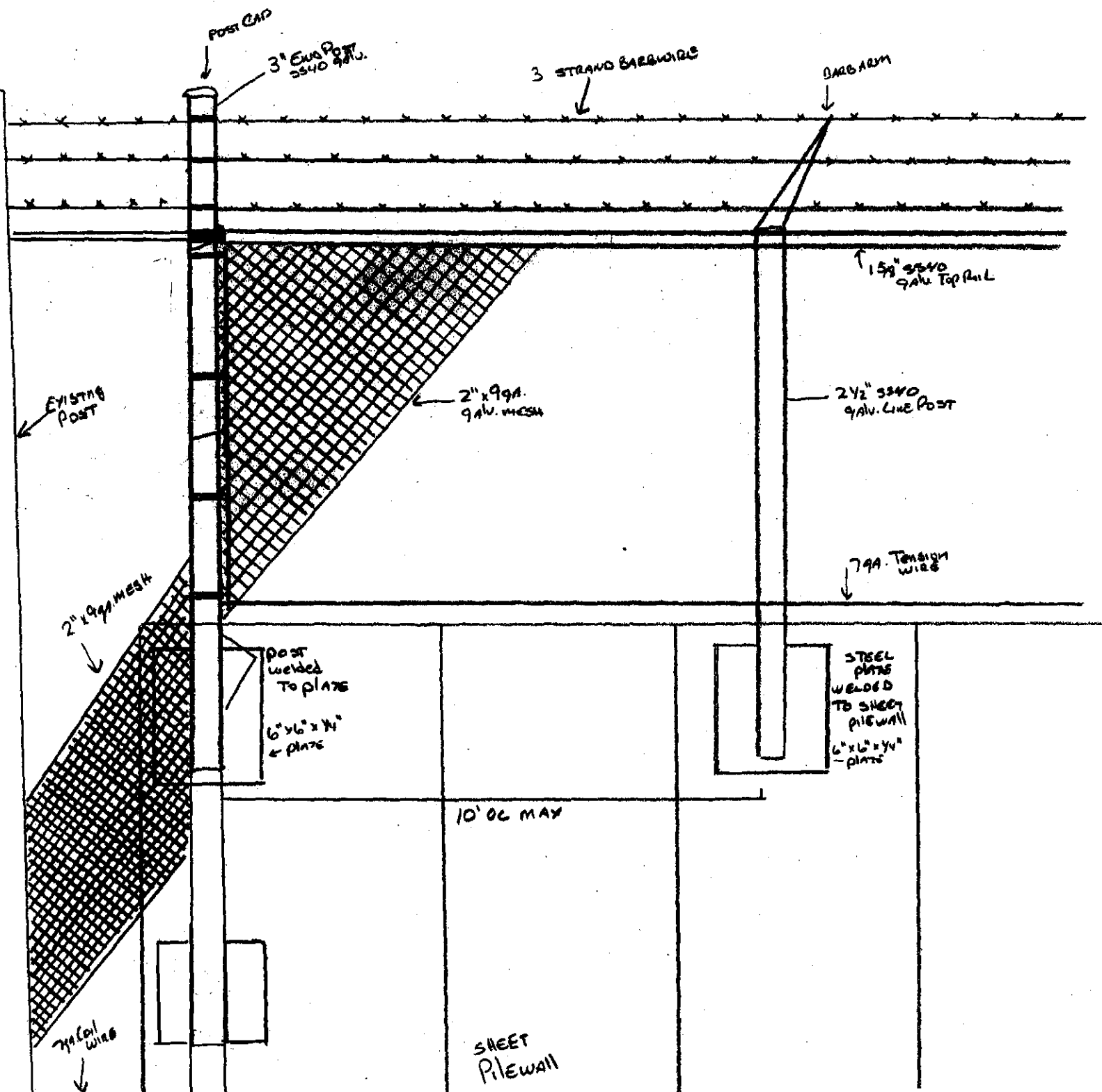




270 Knickerbocker Avenue  
Hillsdale, NJ 07642

Fax: (201) 722-2549

Office: (201) 722-0789

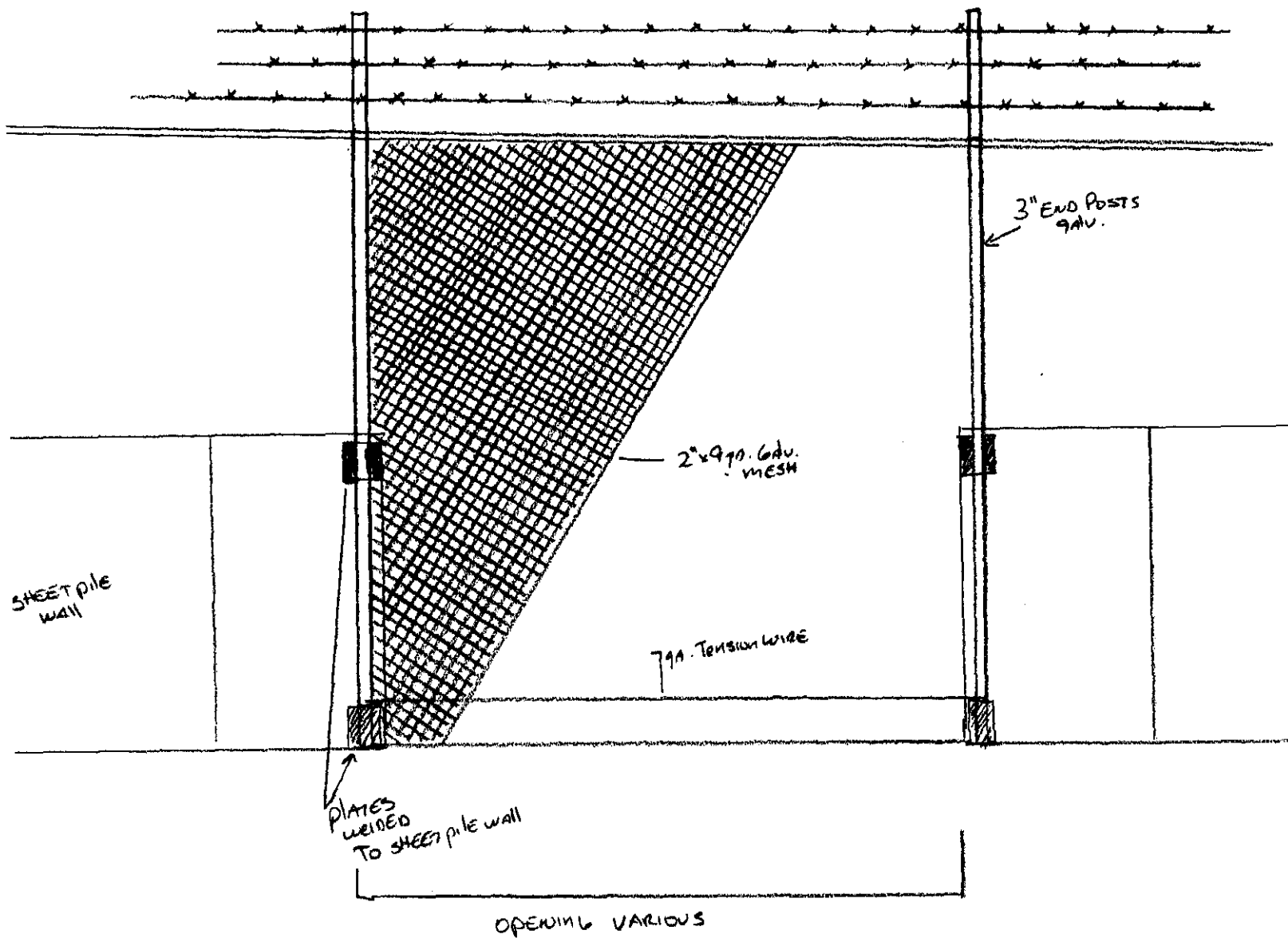




Office: (201) 722-0789

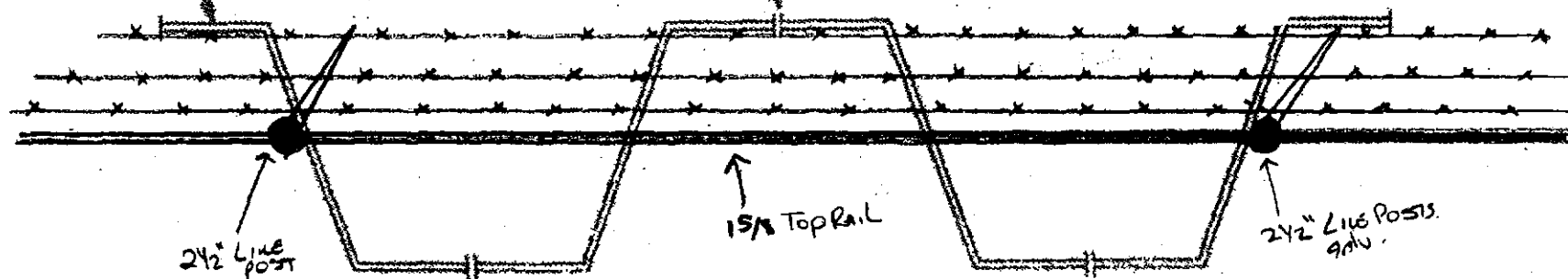
270 Knickerbocker Avenue  
Hillsdale, NJ 07642

Fax: (201) 722-2549



STEEL  
SHEET  
PILES

JOINT



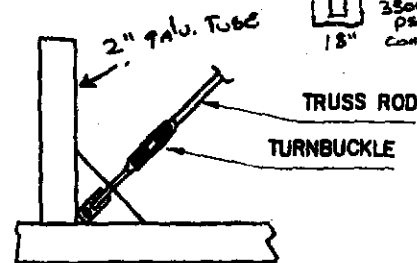
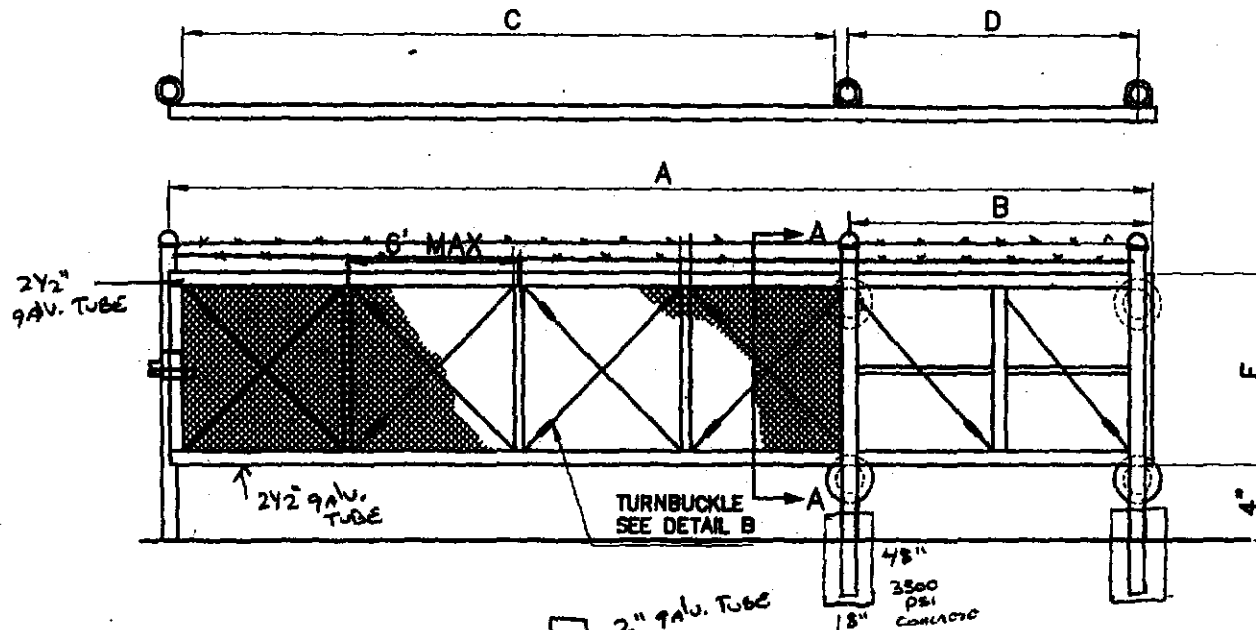
24 1/2\" Live  
Posts

15/16 Top Rail

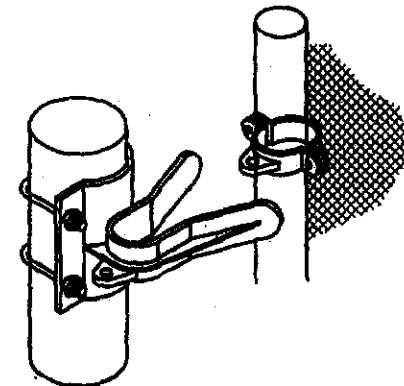
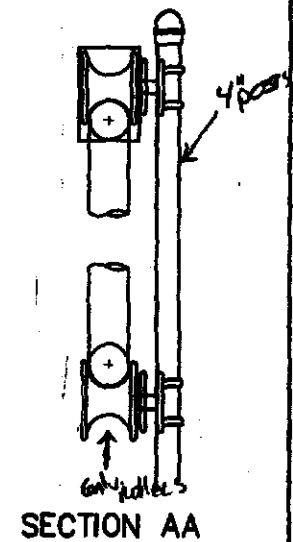
24 1/2\" Live Posts  
9 ft.

# CANTILEVER GATE

USING 4" O.D POST 2Y2" HORIZONTAL RAIL AND 2" VERTICAL RAIL



DETAIL - B



ROLLING GATE LATCH

ITEM	DESCRIPTION	SIZES	DATE	SCALE	TITLE
A	OVERALL GATE WIDTH	45'		NTS	CANTILEVER GATE
B	HALF OF "C" DIMENSION	15'			
C	GATE OPENING	31'			
D	12" LESS THEN "B"	15'			
E	GATE HEIGHT	84" (6+1)			
			DRAWN BY	DRAWING NO.	CANTILEVER WITH ROLLER



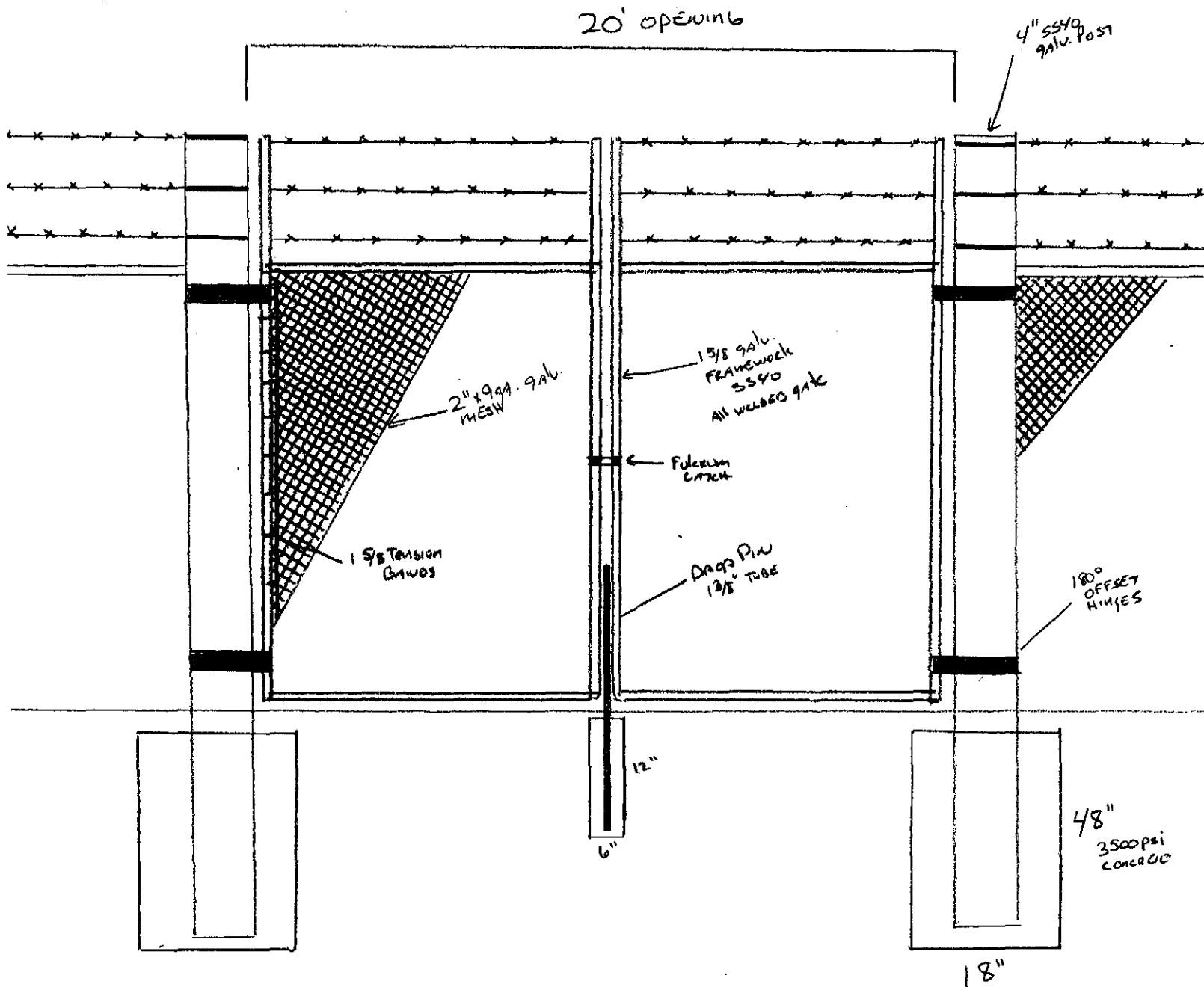
# ANCHOR

FENCE CONTRACTORS, INC.

Office: (201) 722-0789

270 Knickerbocker Avenue  
Hillsdale, NJ 07642

Fax: (201) 722-2549





Sheet #	1	2	3	4	5	6	6	7	8
Date	6/2/2008	6/2/2008	6/5/2008	6/5/2008	6/5/2008	6/5/2008	6/5/2008	6/5/2008	6/5/2008
Disposition of Sheet	SW	N of #1	N of #2	N of #3	N of #4	N of #5	N of #6	N of #7	N of #8
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	2	2	1	1	1	8	8	3	4
Piling Dimensions - Length (ft.)	40	40	40	40	40	40	40	40	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	2.083	2.083	4.166	4.166
Top Elevation of Installed Sheet	7.47	7.44	7.50	7.44	5.52	5.52	6.98	7.13	7.04
Tip Elevation (Drive Depth) of Installed Sheet	-32.53	-32.56	-32.50	-32.56	-34.48	-34.48	-33.02	-32.87	-32.96
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	1.41	1.37	1.42	1.36	3.34	3.34	0.90	1.06	0.96
Square Footage of Sheet cutoff	5.87	5.71	5.92	5.67	13.91	6.96	1.87	4.42	4.00
Top of Elevation after cutoff	6.06	6.07	6.08	6.08	2.18	2.18	6.08	6.07	6.08
Tip Elevation (bg)	32.53	32.56	32.50	32.56	34.48	34.48	33.02	32.87	32.96
Square Footage of Installed Sheet	160.76594	160.93258	160.72428	160.97424	152.72556	76.36278	81.4453	162.22404	162.64064
Length of sheet below desired Tip Elevation	2.53	2.56	2.50	2.56	4.48	4.48	3.02	2.87	2.96
SqFt of sheet below desired Tip Elevation	10.53998	10.66496	10.415	10.66496	18.66368	9.33184	6.29066	11.95642	12.33136
					Weir				
Target Depth (bg)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Total Length Allowed for Payment	36.06	36.07	36.08	36.08	35.52	35.52	36.08	36.07	36.08
Total SqFt for Payment	150.22596	150.26762	150.30928	150.30928	147.97632	73.98816	75.15464	150.26762	150.30928

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	9	10	11	12	13	14	15	16	17
Date	6/5/2008	6/5/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008
Disposition of Sheet	N of #9	N of #10	N of #11	N of #12	N of #13	N of #14	N of #15	N of #16	N of #17
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	1	2	2	2	2	5	2	2	16
Piling Dimensions - Length (ft.)	40	40	40	40	40	40	40	40	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	7.07	7.06	7.18	7.30	7.36	7.28	7.35	7.38	7.39
Tip Elevation (Drive Depth) of Installed Sheet	-32.93	-32.94	-32.82	-32.70	-32.64	-32.72	-32.65	-32.62	-32.61
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.98	0.97	1.07	1.19	1.26	1.19	1.26	1.29	1.29
Square Footage of Sheet cutoff	4.08	4.04	4.46	4.96	5.25	4.96	5.25	5.37	5.37
Top of Elevation after cutoff	6.09	6.09	6.11	6.11	6.10	6.09	6.09	6.09	6.10
Tip Elevation (bg)	32.93	32.94	32.82	32.70	32.64	32.72	32.65	32.62	32.61
Square Footage of Installed Sheet	162.55732	162.59898	162.18238	161.68246	161.39084	161.68246	161.39084	161.26586	161.26586
Length of sheet below desired Tip Elevation	2.93	2.94	2.82	2.70	2.64	2.72	2.65	2.62	2.61
SqFt of sheet below desired Tip Elevation	12.20638	12.24804	11.74812	11.2482	10.99824	11.33152	11.0399	10.91492	10.87326
Target Depth (bg)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Total Length Allowed for Payment	36.09	36.09	36.11	36.11	36.10	36.09	36.09	36.09	36.10
Total SqFt for Payment	150.35094	150.35094	150.43426	150.43426	150.3926	150.35094	150.35094	150.35094	150.3926

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	18	19	20	21	22	23	24	25	26
Date	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/6/2008	6/10/2008	6/10/2008
Disposition of Sheet	N of #18	N of #19	N of #20	N of #21	N of #22	N of #23	N of #24	S of #1	S of #25
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	2	2	2	2	2	2	41	2	2
Piling Dimensions - Length (ft.)	40	40	40	40	40	40	40	40	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	2.083	2.193
Top Elevation of Installed Sheet	7.44	7.51	7.53	7.65	7.74	8.49	8.14	7.45	7.60
Tip Elevation (Drive Depth) of Installed Sheet	-32.56	-32.49	-32.47	-32.35	-32.26	-31.51	-31.86	-32.55	-32.40
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	1.32	1.40	1.42	1.56	1.67	2.39	2.04	1.39	1.53
Square Footage of Sheet cutoff	5.50	5.83	5.92	6.50	6.96	9.96	8.50	2.90	3.36
Top of Elevation after cutoff	6.12	6.11	6.11	6.09	6.07	6.10	6.10	6.06	6.07
Tip Elevation (bg)	32.56	32.49	32.47	32.35	32.26	31.51	31.86	32.55	32.40
Square Footage of Installed Sheet	161.14088	160.8076	160.72428	160.14104	159.68278	156.68326	158.14136	80.42463	84.36471
Length of sheet below desired Tip Elevation	2.56	2.49	2.47	2.35	2.26	1.51	1.86	2.55	2.40
SqFt of sheet below desired Tip Elevation	10.66496	10.37334	10.29002	9.7901	9.41516	6.29066	7.74876	5.31165	5.2632
									WingWall
Target Depth (bg)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Total Length Allowed for Payment	36.12	36.11	36.11	36.09	36.07	36.10	36.10	36.06	36.07
Total SqFt for Payment	150.47592	150.43426	150.43426	150.35094	150.26762	150.3926	150.3926	75.11298	79.10151

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	27	28	29	30	31	32	33	34	34
Date	6/10/2008	6/10/2008	6/10/2008	6/10/2008	6/11/2008	6/11/2008	6/11/2008	6/11/2008	6/11/2008
Disposition of Sheet	S of #26	S of #27	N of #24	N of #25	N of #26	N of #27	N of #28	N of #29	N of #30
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	3	7	6	2	10	3	2	3	3
Piling Dimensions - Length (ft.)	40	40	40	40	40	40	40	40	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	2.083	2.083
Top Elevation of Installed Sheet	7.74	7.72	12.48	7.26	6.54	6.49	3.79	3.79	6.56
Tip Elevation (Drive Depth) of Installed Sheet	-32.26	-32.28	-27.52	-32.74	-33.46	-33.51	-36.21	-36.21	-33.44
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	-27.52	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	1.67	1.65	6.36	1.18	0.46	0.52	1.79	1.80	0.47
Square Footage of Sheet cutoff	6.96	6.87	26.50	4.92	1.92	2.17	7.46	3.75	0.98
Top of Elevation after cutoff	6.07	6.07	6.12	6.08	6.08	5.97	2.00	1.99	6.09
Tip Elevation (bg)	32.26	32.28	27.52	32.74	33.46	33.51	36.21	36.21	33.44
Square Footage of Installed Sheet	159.68278	159.7661	140.14424	161.72412	164.72364	164.47368	159.18286	79.5706	82.34099
Length of sheet below desired Tip Elevation	2.26	2.28	-2.48	2.74	3.46	3.51	6.21	6.21	3.44
SqFt of sheet below desired Tip Elevation	9.41516	9.49848	-10.33168	11.41484	14.41436	14.62266	25.87086	12.93543	7.16552
							Weir		
Target Depth (bg)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Total Length Allowed for Payment	36.07	36.07	36.12	36.08	36.08	35.97	33.79	33.79	36.09
Total SqFt for Payment	150.26762	150.26762	150.47592	150.30928	150.30928	149.85102	140.76914	70.38457	75.17547

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	35	36	37	38	39	40	41	42	43
Date	6/11/2008	6/11/2008	6/11/2008	6/11/2008	6/11/2008	6/11/2008	6/11/2008	6/11/2008	6/12/2008
Disposition of Sheet	N of #31	N of #32	N of #33	N of #34	N of #35	N of #36	N of #37	N of #38	N of #39
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	2	3	6	2	2	2	2	5	2
Piling Dimensions - Length (ft.)	40	40	40	40	40	40	40	40	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.50	6.45	6.46	6.55	6.58	6.64	6.49	6.60	6.51
Tip Elevation (Drive Depth) of Installed Sheet	-33.50	-33.55	-33.54	-33.45	-33.42	-33.36	-33.51	-33.40	-33.49
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.40	0.36	0.37	0.44	0.51	0.56	0.40	0.51	0.41
Square Footage of Sheet cutoff	1.67	1.50	1.54	1.83	2.12	2.33	1.67	2.12	1.71
Top of Elevation after cutoff	6.10	6.09	6.09	6.11	6.07	6.08	6.09	6.09	6.10
Tip Elevation (bg)	33.50	33.55	33.54	33.45	33.42	33.36	33.51	33.40	33.49
Square Footage of Installed Sheet	164.9736	165.14024	165.09858	164.80696	164.51534	164.30704	164.9736	164.51534	164.93194
Length of sheet below desired Tip Elevation	3.50	3.55	3.54	3.45	3.42	3.36	3.51	3.40	3.49
SqFt of sheet below desired Tip Elevation	14.581	14.7893	14.74764	14.3727	14.24772	13.99776	14.62266	14.1644	14.53934
Target Depth (bg)	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Total Length Allowed for Payment	36.10	36.09	36.09	36.11	36.07	36.08	36.09	36.09	36.10
Total SqFt for Payment	150.3926	150.35094	150.35094	150.43426	150.26762	150.30928	150.35094	150.35094	150.3926

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	44	45	46	47	48	49	50	51	52
Date	6/12/2008	6/12/2008	6/12/2008	6/12/2008	6/12/2008	6/12/2008	6/12/2008	6/12/2008	6/13/2008
Disposition of Sheet	N of #40	N of #41	N of #42	N of #43	N of #44	N of #45	N of #46	N of #47	N of #48
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	2	6	5	2	2	53	8	7	12
Piling Dimensions - Length (ft.)	40	40	40	40	40	40	20	40	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.47	6.62	6.69	6.61	6.98	9.85	10.25	6.80	6.93
Tip Elevation (Drive Depth) of Installed Sheet	-33.53	-33.38	-33.31	-33.39	-33.02	-30.15	-9.75	-33.20	-33.07
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	-30.15	-9.75	n/a	n/a

Amount of sheet cutoff	0.39	0.55	0.61	0.53	0.91	3.77	4.18	0.73	0.85
Square Footage of Sheet cutoff	1.62	2.29	2.54	2.21	3.79	15.71	17.41	3.04	3.54
Top of Elevation after cutoff	6.08	6.07	6.08	6.08	6.07	6.08	6.07	6.07	6.08
Tip Elevation (bg)	33.53	33.38	33.31	33.39	33.02	30.15	9.75	33.20	33.07
Square Footage of Installed Sheet	165.01526	164.3487	164.09874	164.43202	162.84894	150.93418	65.90612	163.59882	163.0989
Length of sheet below desired Tip Elevation	3.53	3.38	3.31	3.39	3.02	0.15	0.00	3.20	3.07
SqFt of sheet below desired Tip Elevation	14.70598	14.08108	13.78946	14.12274	12.58132	0.6249	0	13.3312	12.78962
Target Depth (bg)	30.00	30.00	30.00	30.00	30.00	30.00	9.75	30.00	30.00
Total Length Allowed for Payment	36.08	36.07	36.08	36.08	36.07	36.08	15.82	36.07	36.08
Total SqFt for Payment	150.30928	150.26762	150.30928	150.30928	150.26762	150.30928	65.90612	150.26762	150.30928

### Equipment

American 100 Ton  
Hammer & Steel 4450





Sheet #	53	54	55	55	56	57	58	59	60
Date	6/13/2008	6/13/2008	6/13/2008	6/13/2008	6/13/2008	6/13/2008	6/13/2008	6/16/2008	6/16/2008
Disposition of Sheet	N of #49	N of #50	N of #51	N of #52	N of #53	N of #54	N of #55	N of #56	N of #57
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	5	30	4	4	3	4	15	4	3
Piling Dimensions - Length (ft.)	40	40	45	45	45	45	45	45	45
Piling Dimensions - Width (ft.)	4.166	4.166	2.083	2.083	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.92	6.91	6.97	4.07	4.07	6.76	6.73	6.74	6.70
Tip Elevation (Drive Depth) of Installed Sheet	-33.08	-33.09	-38.03	-40.93	-40.93	-38.24	-38.27	-38.26	-38.30
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.83	0.83	0.88	1.90	1.91	0.68	0.65	0.66	0.61
Square Footage of Sheet cutoff	3.46	3.46	1.83	3.96	7.96	2.83	2.71	2.75	2.54
Top of Elevation after cutoff	6.09	6.08	6.09	2.17	2.16	6.08	6.08	6.08	6.09
Tip Elevation (bg)	33.08	33.09	38.03	40.93	40.93	38.24	38.27	38.26	38.30
Square Footage of Installed Sheet	163.18222	163.18222	91.90196	89.7773	179.51294	184.63712	184.7621	184.72044	184.92874
Length of sheet below desired Tip Elevation	3.08	3.09	3.03	5.93	5.93	3.24	3.27	3.26	3.30
SqFt of sheet below desired Tip Elevation	12.83128	12.87294	6.31149	12.35219	24.70438	13.49784	13.62282	13.58116	13.7478
				Weir					
Target Depth (bg)	30.00	30.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Total Length Allowed for Payment	36.09	36.08	41.09	39.07	39.07	41.08	41.08	41.08	41.09
Total SqFt for Payment	150.35094	150.30928	85.59047	81.38281	162.76562	171.13928	171.13928	171.13928	171.18094

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	61	62	63	64	65	66	67	68	69
Date	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/16/2008	6/17/2008
Disposition of Sheet	N of #58	N of #59	N of #60	N of #61	N of #62	N of #63	N of #64	N of #65	N of #66
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	4	3	3	4	4	3	3	3	3
Piling Dimensions - Length (ft.)	45	45	45	45	45	45	45	45	45
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.78	6.87	6.90	6.96	6.96	7.02	6.95	6.97	7.03
Tip Elevation (Drive Depth) of Installed Sheet	-38.22	-38.13	-38.10	-38.04	-38.04	-37.98	-38.05	-38.03	-37.97
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.69	0.78	0.83	0.88	0.88	0.92	0.87	0.87	0.95
Square Footage of Sheet cutoff	2.87	3.25	3.46	3.67	3.67	3.83	3.62	3.62	3.96
Top of Elevation after cutoff	6.09	6.09	6.07	6.08	6.08	6.10	6.08	6.10	6.08
Tip Elevation (bg)	38.22	38.13	38.10	38.04	38.04	37.98	38.05	38.03	37.97
Square Footage of Installed Sheet	184.59546	184.22052	184.01222	183.80392	183.80392	183.63728	183.84558	183.84558	183.5123
Length of sheet below desired Tip Elevation	3.22	3.13	3.10	3.04	3.04	2.98	3.05	3.03	2.97
SqFt of sheet below desired Tip Elevation	13.41452	13.03958	12.9146	12.66464	12.66464	12.41468	12.7063	12.62298	12.37302
Target Depth (bg)	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Total Length Allowed for Payment	41.09	41.09	41.07	41.08	41.08	41.10	41.08	41.10	41.08
Total SqFt for Payment	171.18094	171.18094	171.09762	171.13928	171.13928	171.2226	171.13928	171.2226	171.13928

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	70	71	72	73	74	75	76	77	78
Date	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/17/2008	6/18/2008
Disposition of Sheet	N of #67	N of #68	N of #69	N of #70	N of #71	N of #72	N of #73	N of #74	N of #75
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	4	4	4	3	2	9	2	6	3
Piling Dimensions - Length (ft.)	45	45	45	45	45	45	45	45	45
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	7.01	6.99	7.03	7.06	7.15	7.34	7.30	7.37	7.43
Tip Elevation (Drive Depth) of Installed Sheet	-37.99	-38.01	-37.97	-37.94	-37.85	-37.66	-37.70	-37.63	-37.57
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.93	0.89	0.96	0.97	1.04	1.24	1.20	1.29	1.37
Square Footage of Sheet cutoff	3.87	3.71	4.00	4.04	4.33	5.17	5.00	5.37	5.71
Top of Elevation after cutoff	6.08	6.10	6.07	6.09	6.11	6.10	6.10	6.08	6.06
Tip Elevation (bg)	37.99	38.01	37.97	37.94	37.85	37.66	37.70	37.63	37.57
Square Footage of Installed Sheet	183.59562	183.76226	183.47064	183.42898	183.13736	182.30416	182.4708	182.09586	181.76258
Length of sheet below desired Tip Elevation	2.99	3.01	2.97	2.94	2.85	2.66	2.70	2.63	2.57
SqFt of sheet below desired Tip Elevation	12.45634	12.53966	12.37302	12.24804	11.8731	11.08156	11.2482	10.95658	10.70662
Target Depth (bg)	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Total Length Allowed for Payment	41.08	41.10	41.07	41.09	41.11	41.10	41.10	41.08	41.06
Total SqFt for Payment	171.13928	171.2226	171.09762	171.18094	171.26426	171.2226	171.2226	171.13928	171.05596

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	79	80	81	82	83	84	85	86	87
Date	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/18/2008	6/19/2008
Disposition of Sheet	N of #76	N of #77	N of #78	N of #79	N of #80	N of #81	N of #82	N of #83	N of #84
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	2	3	2	2	2	3	2	3	17
Piling Dimensions - Length (ft.)	45	45	45	45	45	45	45	45	45
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	7.48	7.43	7.48	7.51	7.66	7.60	7.41	7.21	6.75
Tip Elevation (Drive Depth) of Installed Sheet	-37.52	-37.57	-37.52	-37.49	-37.34	-37.40	-37.59	-37.79	-38.25
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	1.39	1.31	1.39	1.40	1.67	1.63	1.47	1.19	0.72
Square Footage of Sheet cutoff	5.79	5.46	5.79	5.83	6.96	6.79	6.12	4.96	3.00
Top of Elevation after cutoff	6.09	6.12	6.09	6.11	5.99	5.97	5.94	6.02	6.03
Tip Elevation (bg)	37.52	37.57	37.52	37.49	37.34	37.40	37.59	37.79	38.25
Square Footage of Installed Sheet	181.67926	182.01254	181.67926	181.6376	180.51278	180.67942	181.34598	182.51246	184.47048
Length of sheet below desired Tip Elevation	2.52	2.57	2.52	2.49	2.34	2.40	2.59	2.79	3.25
SqFt of sheet below desired Tip Elevation	10.49832	10.70662	10.49832	10.37334	9.74844	9.9984	10.78994	11.62314	13.5395
Target Depth (bg)	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Total Length Allowed for Payment	41.09	41.12	41.09	41.11	40.99	40.97	40.94	41.02	41.03
Total SqFt for Payment	171.18094	171.30592	171.18094	171.26426	170.76434	170.68102	170.55604	170.88932	170.93098

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	88	89	90	91	91	92	93	94	95
Date	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008
Disposition of Sheet	N of #85	N of #86	N of #87	N of #88	N of #89	N of #90	N of #91	N of #92	N of #93
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	2	2	4	7	7	5	2	3	3
Piling Dimensions - Length (ft.)	45	45	45	45	45	45	45	45	45
Piling Dimensions - Width (ft.)	2.266	2.083	4.166	2.083	2.083	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.69	6.69	6.73	6.81	6.81	6.85	6.76	6.67	6.70
Tip Elevation (Drive Depth) of Installed Sheet	-38.31	-38.31	-38.27	-38.19	-38.19	-38.15	-38.24	-38.33	-38.30
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'		10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.61	0.61	0.71	0.82	4.79	4.84	0.79	0.72	0.77
Square Footage of Sheet cutoff	1.38	1.27	2.96	1.71	9.98	20.16	3.29	3.00	3.21
Top of Elevation after cutoff	6.08	6.08	6.02	5.99	2.02	2.01	5.97	5.95	5.93
Tip Elevation (bg)	38.31	38.31	38.27	38.19	38.19	38.15	38.24	38.33	38.30
Square Footage of Installed Sheet	100.58774	92.46437	184.51214	92.02694	83.75743	167.30656	184.17886	184.47048	184.26218
Length of sheet below desired Tip Elevation	3.31	3.31	3.27	3.19	3.19	3.15	3.24	3.33	3.30
SqFt of sheet below desired Tip Elevation	7.50046	6.89473	13.62282	6.64477	6.64477	13.1229	13.49784	13.87278	13.7478
	WingWall				Weir				
Target Depth (bg)	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Total Length Allowed for Payment	41.08	41.08	41.02	40.99	41.02	41.01	40.97	40.95	40.93
Total SqFt for Payment	93.08728	85.56964	170.88932	85.38217	85.44466	170.84766	170.68102	170.5977	170.51438

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	96	97	98	99	100	101	102	103	104
Date	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/24/2008	6/25/2008
Disposition of Sheet	N of #94	N of #95	N of #96	N of #97	N of #98	N of #99	N of #100	N of #101	N of #102
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	3	3	5	3	8	4	3	4	6
Piling Dimensions - Length (ft.)	45	45	45	45	50	50	50	50	50
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.71	6.64	6.71	6.71	7.47	6.85	6.84	7.05	6.91
Tip Elevation (Drive Depth) of Installed Sheet	-38.29	-38.36	-38.29	-38.29	-42.53	-43.15	-43.16	-42.95	-43.09
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.77	0.70	0.77	0.76	1.52	0.91	0.86	1.06	0.92
Square Footage of Sheet cutoff	3.21	2.92	3.21	3.17	6.33	3.79	3.58	4.42	3.83
Top of Elevation after cutoff	5.94	5.94	5.94	5.95	5.95	5.94	5.98	5.99	5.99
Tip Elevation (bg)	38.29	38.36	38.29	38.29	42.53	43.15	43.16	42.95	43.09
Square Footage of Installed Sheet	184.26218	184.5538	184.26218	184.30384	201.96768	204.50894	204.71724	203.88404	204.46728
Length of sheet below desired Tip Elevation	3.29	3.36	3.29	3.29	2.53	3.15	3.16	2.95	3.09
SqFt of sheet below desired Tip Elevation	13.70614	13.99776	13.70614	13.70614	10.53998	13.1229	13.16456	12.2897	12.87294
Target Depth (bg)	35.00	35.00	35.00	35.00	40.00	40.00	40.00	40.00	40.00
Total Length Allowed for Payment	40.94	40.94	40.94	40.95	45.95	45.94	45.98	45.99	45.99
Total SqFt for Payment	170.55604	170.55604	170.55604	170.5977	191.4277	191.38604	191.55268	191.59434	191.59434

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	105	106	107	108	109	110	111	112	113
Date	6/25/2008	6/25/2008	6/25/2008	6/25/2008	6/25/2008	6/25/2008	6/25/2008	6/25/2008	6/25/2008
Disposition of Sheet	N of #103	N of #104	N of #105	N of #106	N of #107	N of #108	N of #109	N of #110	N of #111
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	4	3	3	3	3	4	4	5	3
Piling Dimensions - Length (ft.)	50	50	50	50	50	50	50	50	50
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	6.71	6.74	6.61	6.82	6.79	6.85	7.18	7.23	7.40
Tip Elevation (Drive Depth) of Installed Sheet	-43.29	-43.26	-43.39	-43.18	-43.21	-43.15	-42.82	-42.77	-42.60
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	0.72	0.74	0.63	0.83	0.80	0.84	1.16	1.20	1.41
Square Footage of Sheet cutoff	3.00	3.08	2.62	3.46	3.33	3.50	4.83	5.00	5.87
Top of Elevation after cutoff	5.99	6.00	5.98	5.99	5.99	6.01	6.02	6.03	5.99
Tip Elevation (bg)	43.29	43.26	43.39	43.18	43.21	43.15	42.82	42.77	42.60
Square Footage of Installed Sheet	205.30048	205.21716	205.67542	204.84222	204.9672	204.80056	203.46744	203.3008	202.42594
Length of sheet below desired Tip Elevation	3.29	3.26	3.39	3.18	3.21	3.15	2.82	2.77	2.60
SqFt of sheet below desired Tip Elevation	13.70614	13.58116	14.12274	13.24788	13.37286	13.1229	11.74812	11.53982	10.8316
Target Depth (bg)	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Total Length Allowed for Payment	45.99	46.00	45.98	45.99	45.99	46.01	46.02	46.03	45.99
Total SqFt for Payment	191.59434	191.636	191.55268	191.59434	191.59434	191.67766	191.71932	191.76098	191.59434

### Equipment

American 100 Ton  
Hammer & Steel 4450





Sheet #	114	115	116	117	118	119	120	120	121
Date	6/25/2008	6/25/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008
Disposition of Sheet	N of #112	N of #113	N of #114	N of #115	N of #116	N of #117	N of #118	N of #119	N of #120
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	4	34	10	13	7	6	8	8	2
Piling Dimensions - Length (ft.)	50	50	50	50	50	50	50	50	50
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	2.083	2.083	4.166
Top Elevation of Installed Sheet	6.99	6.84	7.04	7.65	7.09	7.08	7.55	7.55	7.50
Tip Elevation (Drive Depth) of Installed Sheet	-43.01	-43.16	-42.96	-42.35	-42.91	-42.92	-42.45	-42.45	-42.50
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	Made Contact	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	1.00	0.84	1.01	1.63	1.09	5.13	5.58	1.59	1.52
Square Footage of Sheet cutoff	4.17	3.50	4.21	6.79	4.54	21.37	11.62	3.31	6.33
Top of Elevation after cutoff	5.99	6.00	6.03	6.02	6.00	1.95	1.97	5.96	5.98
Tip Elevation (bg)	43.01	43.16	42.96	42.35	42.91	42.92	42.45	42.45	42.50
Square Footage of Installed Sheet	204.134	204.80056	204.09234	201.50942	203.75906	186.92842	92.52686	100.83803	201.96768
Length of sheet below desired Tip Elevation	3.01	3.16	2.96	2.35	2.91	2.92	2.45	2.45	2.50
SqFt of sheet below desired Tip Elevation	12.53966	13.16456	12.33136	9.7901	12.12306	12.16472	5.10335	5.10335	10.415
						Weir			
Target Depth (bg)	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Total Length Allowed for Payment	45.99	46.00	46.03	46.02	46.00	46.08	46.55	45.96	45.98
Total SqFt for Payment	191.59434	191.636	191.76098	191.71932	191.636	191.96928	96.96365	95.73468	191.55268

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	122	123	124	125	126	127	128	129	130
Date	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008	6/27/2008
Disposition of Sheet	N of #121	N of #122	N of #123	N of #124	N of #125	N of #126	N of #127	N of #128	N of #129
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	3	6	33	3	4	3	4	6	3
Piling Dimensions - Length (ft.)	50	50	50	50	50	50	50	50	50
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	8.86	7.30	7.31	7.54	7.81	7.00	7.22	7.50	7.32
Tip Elevation (Drive Depth) of Installed Sheet	-41.14	-42.70	-42.69	-42.46	-42.19	-43.00	-42.78	-42.50	-42.68
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	Carried #123	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	2.89	1.33	1.36	1.59	1.85	1.03	1.27	1.56	1.39
Square Footage of Sheet cutoff	12.04	5.54	5.67	6.62	7.71	4.29	5.29	6.50	5.79
Top of Elevation after cutoff	5.97	5.97	5.95	5.95	5.96	5.97	5.95	5.94	5.93
Tip Elevation (bg)	41.14	42.70	42.69	42.46	42.19	43.00	42.78	42.50	42.68
Square Footage of Installed Sheet	196.26026	202.75922	202.63424	201.67606	200.5929	204.00902	203.00918	201.80104	202.50926
Length of sheet below desired Tip Elevation	1.14	2.70	2.69	2.46	2.19	3.00	2.78	2.50	2.68
SqFt of sheet below desired Tip Elevation	4.74924	11.2482	11.20654	10.24836	9.12354	12.498	11.58148	10.415	11.16488
Target Depth (bg)	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Total Length Allowed for Payment	45.97	45.97	45.95	45.95	45.96	45.97	45.95	45.94	45.93
Total SqFt for Payment	191.51102	191.51102	191.4277	191.4277	191.46936	191.51102	191.4277	191.38604	191.34438

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	131	132	133	134	135	136	137	138	139
Date	6/27/2008	6/30/2008	6/30/2008	6/30/2008	6/30/2008	6/30/2008	6/30/2008	6/30/2008	6/30/2008
Disposition of Sheet	N of #130	N of #131	N of #132	N of #133	N of #134	N of #135	N of #136	N of #137	N of #138
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	7	3	2	4	3	5	2	3	5
Piling Dimensions - Length (ft.)	50	50	50	50	50	50	50	50	50
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166	4.166
Top Elevation of Installed Sheet	7.93	7.62	7.71	7.60	7.73	7.61	7.52	7.46	8.42
Tip Elevation (Drive Depth) of Installed Sheet	-42.07	-42.38	-42.29	-42.40	-42.27	-42.39	-42.48	-42.54	-41.58
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	2.00	1.67	1.76	1.64	1.76	1.64	1.56	1.52	2.46
Square Footage of Sheet cutoff	8.33	6.96	7.33	6.83	7.33	6.83	6.50	6.33	10.25
Top of Elevation after cutoff	5.93	5.95	5.95	5.96	5.97	5.97	5.96	5.94	5.96
Tip Elevation (bg)	42.07	42.38	42.29	42.40	42.27	42.39	42.48	42.54	41.58
Square Footage of Installed Sheet	199.968	201.34278	200.96784	201.46776	200.96784	201.46776	201.80104	201.96768	198.05164
Length of sheet below desired Tip Elevation	2.07	2.38	2.29	2.40	2.27	2.39	2.48	2.54	1.58
SqFt of sheet below desired Tip Elevation	8.62362	9.91508	9.54014	9.9984	9.45682	9.95674	10.33168	10.58164	6.58228
Target Depth (bg)	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Total Length Allowed for Payment	45.93	45.95	45.95	45.96	45.97	45.97	45.96	45.94	45.96
Total SqFt for Payment	191.34438	191.4277	191.4277	191.46936	191.51102	191.51102	191.46936	191.38604	191.46936

### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	140	141	142	143	143	144	145	146	147
Date	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008	7/1/2008
Disposition of Sheet	N of #139	N of #140	N of #141	N of #142	N of #143	N of #144	N of #145	N of #146	N of #147
Driving Equipment Used	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450	H&S 4450
Driving Equipment Performance Data	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piling Penetration Rate (min.)	66	42	7	2	2	2	12	2	2
Piling Dimensions - Length (ft.)	50	50	50	50	50	50	50	50	40
Piling Dimensions - Width (ft.)	4.166	4.166	4.166	2.083	2.083	2.172	2.083	4.166	4.166
Top Elevation of Installed Sheet	8.52	8.01	7.73	8.33	8.33	8.00	7.97	7.84	7.68
Tip Elevation (Drive Depth) of Installed Sheet	-41.48	-41.99	-42.27	-41.67	-41.67	-42.00	-42.03	-42.16	-32.32
Alignment & Vertical Check	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'	10', 20', 30'
Location of Splices and Inspection of Welds	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location and Depth Where Difficulty Driving Occurred	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Amount of sheet cutoff	2.57	2.05	5.88	6.46	2.39	2.05	2.00	1.87	1.71
Square Footage of Sheet cutoff	10.71	8.54	24.50	13.46	4.98	4.45	4.17	7.79	7.12
Top of Elevation after cutoff	5.95	5.96	1.85	1.87	5.94	5.95	5.97	5.97	5.97
Tip Elevation (bg)	41.48	41.99	42.27	41.67	41.67	42.00	42.03	42.16	32.32
Square Footage of Installed Sheet	197.59338	199.7597	183.80392	90.69382	99.17163	104.1474	99.984	200.50958	159.51614
Length of sheet below desired Tip Elevation	1.48	1.99	2.27	1.67	1.67	2.00	2.03	2.16	2.32
SqFt of sheet below desired Tip Elevation	6.16568	8.29034	9.45682	3.47861	3.47861	4.344	4.22849	8.99856	9.66512
			Weir				WingWall		
Target Depth (bg)	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	30.00
Total Length Allowed for Payment	45.95	45.96	45.93	45.93	45.94	45.95	45.97	45.97	35.97
Total SqFt for Payment	191.4277	191.46936	191.34438	95.67219	95.69302	99.8034	95.75551	191.51102	149.85102

#### Equipment

American 100 Ton  
Hammer & Steel 4450



Sheet #	148				
Date	7/1/2008				
Disposition of Sheet	N of #148				
Driving Equipment Used	H&S 4450				
Driving Equipment Performance Data	n/a				
Piling Penetration Rate (min.)	1				
Piling Dimensions - Length (ft.)	20				
Piling Dimensions - Width (ft.)	4.166	Total Linear Footage =	604.452		
Top Elevation of Installed Sheet	7.54				
Tip Elevation (Drive Depth) of Installed Sheet	-12.46				
Alignment & Vertical Check	10', 20'				
Location of Splices and Inspection of Welds	n/a				
Location and Depth Where Difficulty Driving Occurred	n/a				

Amount of sheet cutoff	1.59				
Square Footage of Sheet cutoff	6.62	Total Square Footage Cutoff=	839.43		
Top of Elevation after cutoff	5.95				
Tip Elevation (bg)	12.46				
Square Footage of Installed Sheet	76.69606	Total Square Footage Installed =	26006.6927		
Length of sheet below desired Tip Elevation	0.00				
SqFt of sheet below desired Tip Elevation	0	Total Square Footage Below Tip Elev. =	1697.29712		
Target Depth (bg)	12.46				
Total Length Allowed for Payment	0.00				
Total SqFt for Payment	0	Total Square Footage for Payment=	24353.8885		

#### Equipment

American 100 Ton  
Hammer & Steel 4450

Total Square Footage Installed as of 6/30/08= 23051.3609

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

SUPPLIER	Material Delivered
<b><u>Tilcon</u></b>	
Pompton Lakes Quarry Foot of Broad Street Pompton Lakes, New Jersey 07470	Grading fill, Cover soil, Bedding sand, No. 57 stone, DGA
Mount Hope Quarry 625 Mount Hope Road Wharton, New Jersey 07885	Grading fill, Cover soil, Bedding sand, No. 57 stone, DGA
<b><u>Armored Inc.</u></b>	
34 Chapel Avenue Jersey City, New Jersey 07305	DGA, Grading Fill, No. 57 Stone, AASHTO #2
<b><u>Grinnell Concrete Paving Stones, Inc.</u></b>	
482 Houses Corner Rd. Sparta, New Jersey 07871	Vegetative Support Layer (top soil)

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported Grading Fill**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
10/6/08	38	1,984,669	992.3	26.1
10/7/08	31	1,603,340	801.7	25.9
10/8/08	23	1,212,320	606.2	26.4
10/9/08	36	1,863,520	931.8	25.9
10/10/08	4	203,900	102.0	25.5
10/13/08	6	311,120	155.6	25.9
10/14/08	10	524,760	262.4	26.2
10/15/08	6	313,600	156.8	26.1
10/27/08	3	155,820	77.9	26.0
10/31/08	3	136,460	68.2	22.7
12/4/08	2	100,940	50.5	25.2
12/8/08	2	99,960	50.0	25.0
12/15/08	110	5,710,300	2,855.2	26.0
12/16/08	48	2,472,200	1,236.1	25.8
12/17/08	23	1,167,600	583.8	25.4
12/18/08	71	3,667,100	1,833.6	25.8
12/19/08	23	1,194,320	597.2	26.0
12/29/08	62	3,237,440	1,618.7	26.1
12/30/08	73	3,843,960	1,922.0	26.3
12/31/08	15	785,080	392.5	26.2
1/5/09	6	318,680	159.3	26.6
2/10/09	7	363,420	181.7	26.0
7/14/2010	10	648,550	324.3	32.4
8/13/2010	8	533,360	266.7	33.3
8/24/2010	4	222,540	111.3	27.8
8/30/2010	5	327,800	163.9	32.8
5/27/2011	4	204,260	102.1	25.5
5/31/2011	6	309,620	154.8	25.8
6/1/2011	10	509,200	254.6	25.5
6/2/2011	11	562,540	281.3	25.6
6/3/2011	36	1,827,400	913.7	25.4
6/6/2011	20	1,032,200	516.1	25.8
6/7/2011	54	2,706,440	1,353.2	25.1
6/8/2011	20	988,580	494.3	24.7
6/9/2011	12	621,360	310.7	25.9
6/10/2011	6	300,680	150.3	25.1
6/13/2011	1	49,280	24.6	24.6
<b>Totals:</b>	<b>809</b>	<b>42,114,319</b>	<b>21,057.2</b>	<b>26.0</b>



SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported Dense Grade Aggregate**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
5/14/08	16	842,700	421.4	26.3
5/15/08	18	941,560	470.8	26.2
5/20/08	17	881,580	440.8	25.9
5/21/08	5	260,300	130.2	26.0
5/30/08	3	150,700	75.4	25.1
6/9/08	4	211,240	105.6	26.4
6/18/08	10	507,500	253.8	25.4
6/24/08	8	421,660	210.8	26.4
8/27/08	5	251,340	125.7	25.1
11/19/08	3	155,800	77.9	26.0
11/20/08	19	993,060	496.5	26.1
11/26/08	2	99,920	50.0	25.0
12/3/08	3	160,160	80.1	26.7
12/22/08	1	54,360	27.2	27.2
2/10/09	11	570,901	285.5	26.0
2/11/09	1	50,040	25.0	25.0
9/9/2010	4	217,820	108.9	27.2
9/14/2010	2	97,900	49.0	24.5
9/15/2010	3	170,980	85.5	28.5
9/21/2010	2	110,100	55.1	27.5
9/22/2010	2	110,140	55.1	27.5
9/24/2010	2	121,700	60.9	30.4
9/27/2010	1	60,500	30.3	30.3
9/28/2010	3	155,820	77.9	26.0
9/29/2010	3	178,580	89.3	29.8
9/30/2010	13	789,160	394.6	30.4
10/1/2010	7	432,920	216.5	30.9
10/5/2010	6	400,400	200.2	33.4
10/6/2010	3	200,160	100.1	33.4
10/8/2010	3	191,000	95.5	31.8
10/11/2010	6	403,840	201.9	33.7
10/12/2010	13	846,660	423.3	32.6
10/13/2010	6	381,340	190.7	31.8
10/14/2010	5	312,000	156.0	31.2
10/15/2010	4	249,460	124.7	31.2
10/18/2010	9	556,980	278.5	30.9
10/19/2010	3	181,720	90.9	30.3
5/26/2011	3	150,020	75.0	25.0
4/11/2011	3	156,500	78.3	26.1
7/13/2011	8	416,760	208.4	26.0
7/14/2011	9	467,700	233.9	26.0
<b>Totals:</b>	<b>249</b>	<b>13,912,981</b>	<b>6,956.5</b>	<b>27.9</b>

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported 2.5-inch Stone**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
5/23/08	1	49140	24.6	24.6
7/9/08	1	51980	26.0	26.0
9/29/08	1	52,240	26.1	26.1
12/1/08	1	52,000	26.0	26.0
7/14/2010	2	117,960	59.0	29.5
8/27/2010	2	104,840	52.4	26.2
8/30/2010	2	103,060	51.5	25.8
10/4/2010	1	50,500	25.3	25.3
11/5/2010	4	213,900	107.0	26.7
11/10/2010	10	538,460	269.2	26.9
11/11/2010	5	269,820	134.9	27.0
11/12/2010	9	485,080	242.5	26.9
11/16/2010	5	322,320	161.2	32.2
11/17/2010	5	210,120	105.1	21.0
11/17/2010	3	154,600	77.3	25.8
11/23/2010	1	57,500	28.8	28.8
<b>Totals:</b>	<b>53</b>	<b>2,833,520</b>	<b>1,416.8</b>	<b>26.7</b>

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported 2.5-inch Stone**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
10/13/2008	2	102,020	51.0	25.5
10/21/2008	2	103,040	51.5	25.8
10/31/2008	2	106,240	53.1	26.6
11/24/2008	6	310,860	155.4	25.9
11/25/2008	9	463,640	231.8	25.8
11/26/2008	7	364,700	182.4	26.1
1/9/2009	2	103,740	51.9	25.9
1/12/2009	3	152,420	76.2	25.4
2/5/2009	6	302,860	151.4	25.2
2/6/2009	10	527,060	263.5	26.4
2/18/2009	10	504,780	252.4	25.2
7/12/2011	20	985520	492.8	24.6
7/13/2011	3	153000	76.5	25.5
7/14/2011	2	101520	50.8	25.4
<b>Totals:</b>	<b>84</b>	<b>4,281,400</b>	<b>2,140.7</b>	<b>25.5</b>

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported Bedding Sand**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
09/15/08	1	51,260	25.6	25.6
10/16/2008	1	52,920	26.5	26.5
10/20/2008	1	47,980	24.0	24.0
10/23/2008	2	103,940	52.0	26.0
10/24/2008	3	145,300	72.7	24.2
10/27/2008	2	95,940	48.0	24.0
12/1/2008	3	147,040	73.5	24.5
12/2/2008	3	148,860	74.4	24.8
12/3/2008	2	100,280	50.1	25.1
1/9/2009	2	103,740	51.9	25.9
<b>Totals:</b>	<b>20</b>	<b>997,260</b>	<b>498.6</b>	<b>24.9</b>

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported Cover Soil**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
11/5/2008	71	3,725,720	1,862.9	26.2
11/6/2008	59	3,056,260	1,528.1	25.9
11/7/2008	88	4,619,520	2,309.8	26.2
11/10/2008	88	4,544,280	2,272.1	25.8
11/12/2008	3	157,640	78.8	26.3
11/13/2008	3	164,440	82.2	27.4
11/18/2008	1	54,360	27.2	27.2
11/24/2008	3	154,500	77.3	25.8
2/2/2009	37	1,907,200	953.6	25.8
2/4/2009	31	1,573,100	786.6	25.4
2/5/2009	21	1,074,960	537.5	25.6
7/5/2011	30	1,521,560	760.8	25.4
7/6/2011	64	3,328,860	1,664.4	26.0
7/7/2011	69	3,477,980	1,739.0	25.2
7/8/2011	61	3,109,100	1,554.6	25.5
7/11/2011	52	2,638,760	1,319.4	25.4
7/12/2011	24	1,207,960	604.0	25.2
<b>Totals:</b>	<b>705</b>	<b>36,316,200</b>	<b>18,158.1</b>	<b>25.8</b>

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported Vegetative Support Layer**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
11/19/2008	6	340,240	170.1	28.4
11/21/2008	55	2,916,800	1,458.4	26.5
11/22/2008	9	1,225,700	612.9	68.1
6/29/2009	17	846,800	423.4	24.9
6/30/2009	9	439,560	219.8	24.4
7/1/2009	18	858,640	429.3	23.9
7/2/2009	11	527,060	263.5	24.0
7/6/2009	21	1,114,100	557.1	26.5
7/7/2009	2	104,320	52.2	26.1
7/18/2011	20	1,208,120	604.1	30.2
7/19/2011	54	3,209,808	1,604.9	29.7
7/20/2011	25	1,487,820	743.9	29.8
7/21/2011	17	1,029,420	514.7	30.3
<b>Totals:</b>	<b>264</b>	<b>15,308,388</b>	<b>7,654.2</b>	<b>29.0</b>

SEPTEMBER 2011

OPERABLE UNIT NO.2 (OU-2) REMEDY  
216 PATERSON PLANK ROAD  
CARLSTADT, BERGEN COUNTY, NEW JERSEY

943-6222.001

**Imported No. 57 Stone**

Date	Daily Total Load	Total Weight (lbs)	Total Weight (tons)	Avg. Ton/Truck
10/20/2008	1	52260	26.1	26.1
10/21/2008	1	55280	27.6	27.6
10/22/2008	1	52240	26.1	26.1
12/1/2008	1	55220	27.6	27.6
9/2/2010	1	52,500	26.3	26.3
9/14/2010	2	93,780	46.9	23.4
9/22/2010	2	146,640	73.3	36.7
9/27/2010	2	98,580	49.3	24.6
9/28/2010	1	54,340	27.2	27.2
10/6/2010	1	59,800	29.9	29.9
10/7/2010	2	110,720	55.4	27.7
10/8/2010	2	52,080	26.0	13.0
5/26/2011	1	52,080	26.0	26.0
6/2/2011	1	52,000	26.0	26.0
7/1/2011	1	51,900	26.0	26.0
7/20/2011	2	103,800	52.0	26.0
<b>Totals:</b>	<b>22</b>	<b>1,143,220</b>	<b>571.7</b>	<b>26.0</b>



# TILCON NEW YORK INC.

625 MT. HOPE ROAD • WHARTON, NEW JERSEY 07885 • PHONE 973-366-7741

April 17, 2008

Entact Services LLC  
699 South Friendswood Drive  
Friendswood, Texas 77546

Attn: Melisa Oliver

Re: Job at 216 Paterson Plank Road, Carlstadt, NJ

In accordance with your request following your conversation with Gino Labbate this letter hereby serves as a material certification for the following location owned and operated by Tilcon New York Inc.:

Pompton Lakes Quarry  
Foot of Broad Street  
Pompton Lakes, NJ 07470

Please be advised that the DGA and blended virgin material being supplied to you is virgin material from locations quarried at the above referenced facilities, and conforms to the quality requirements of the New Jersey department of transportation Standard Specifications for Road and Bridge Construction.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen O'Reilly".  
Stephen O'Reilly  
Environmental Engineer

SALES FAX: 908-325-0043 • ENGINEERING FAX: 973-659-3926  
RECYCLING FAX: 973-659-3909 • PURCHASING FAX: 973-659-3914

An Equal Opportunity Employer



# SOR TESTING LABORATORIES, INC.

Geotechnical Engineering - Materials Testing - Forensic Studies  
98 Sand Park Rd., Cedar Grove, NJ 07009  
(973) 239-6001 Fax (973) 239-8380

Branch Office:  
New Brunswick, NJ  
(732) 247-4481

Kamil Sor, Ph.D.  
Orhun Sor, P.E.  
Peter G. Micklus, P.E.  
Yilmaz Arhan, Ph.D.  
Kenneth Rowbotham, P.E.

This report is the confidential property of the Client, and information contained may not be published or reproduced without our written permission.

Client:	Entact Services, LLC		
Project:	216 Paterson Plank Road, Carlstadt, NJ		
Subject:	Laboratory Testing of Topsoil (Source: Grinnell)		
Job No.:	08-133	Report No.:	08-2395A Date: 7/25/2008

We present herewith laboratory test results of the topsoil sample received on July 21, 2008 . At the request of the client, the soil was tested for physical and chemical properties to determine its suitability for use as topsoil.

The tests were performed in accordance with the methods recommended in the project specification as follows:

Particle Size (Sieve & Hydrometer Tests)	ASTM D-422
pH	ASTM D-4972
Organic Content	ASTM D-2974
Soil Fertility	Baker Test
Specific Conductance & Total Salts	Methods of Soil Analysis by the American Society of Agronomy, Madison, Wisconsin

## TEST RESULTS

Soil Properties	Topsoil No. 1
Color (Munsell Chart)	Dark Brown
pH	7.1
Organic Matter, %	6.7
Specific Conductance, micromhos/cm	650
Total Salts, mg/kg	455
Texture: (*) (U.S.D.A. Classification)	Sandy Loam
■ % Sand (2.0 - 0.05 mm)	78
■ % Silt (0.05 - 0.002 mm)	15
■ % Clay (<0.002 mm)	7
Available Nutrients: (lbs. per Acre)	
■ Nitrogen (NH <sub>4</sub> and NO <sub>3</sub> )	105
■ Phosphorus (P)	8
■ Potassium (K)	50

(\*) Sieve analysis is presented on the attached Figure 1.

---

# ARMORED, INC.

---

6 LINDEN AVE. EAST.

JERSEY CITY, NJ 07305

TEL # 201-333-6458

FAX # 201-324-0117

FAX NUMBER: 347-750-0860

**To:** Nathan Kalanich  
Modern Industries

**Re:** 216 Paterson Plank Rd.  
Carlstad, NJ

**From** GEORGE COYNE, ARMORED, INC

**Date:** June 23, 2010, 2010

**Number of pages including cover: 1**

**Regarding:** Certification of Clean Fill

To Whom It May Concern:

Armored, Inc. certifies that all material from our facility to the is from a virgin rock source and is free of any contaminants.

Armored, Inc. operates a rock crushing facility located in Jersey City, NJ. That meets the requirements set in N.J.A.C.; sec. 7:26 E. We import virgin rock from construction sites in the New York / New Jersey Metropolitan area. We crush the rock to produce a variety of engineered aggregate products. The facility implements a stringent Material Acceptance Plan, that requires, prior to acceptance, that the source of the rock is thoroughly investigated to ensure that the rock to be shipped to the crusher will be free of hazardous material and contaminants. Further more, every load is inspected at the scale house to ensure that rock is consistent with the

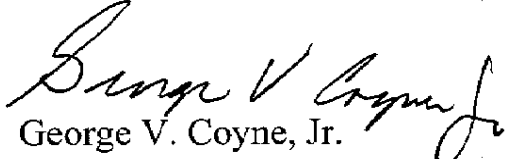
---

# ARMORED, INC.

---

approved source, and is free of contaminants, debris or unacceptable rock types.

Sincerely,

  
George V. Coyne, Jr.  
President, Armored, Inc